

JULY 2021

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INSIDE

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obsession with weight

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Japan's best title hope yet

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www.MartinAllen.art



About the Artist

Martin Allen is a London based artist. Martin came to oil painting through a circuitous route, having drawn for most of his life and being largely self-taught he was eventually re-introduced to oil painting as a preferred medium to create his varied and diverse work. The methods he uses to paint are classic ones, with layered paint applications rounded off by oil glazes. These create, add depth and harmonise colours. He is a member of the GRRC and has shown numerous times at Goodwood, The Affordable Art Fair and others, been a finalist at the 'London art Biennale 2019', alongside various commissions including work for the BP Shipping collection, and most recently Vogue Magazine.

To find out more about his art and enter a free competition to win a signed limited edition print simply visit: martinallen.art/motorsport

Enter your email and you will be entered for the competition plus receive a discount voucher for your first purchase.

For commissions and availability of original paintings email:
mallen@martinallen.art

A DECADE AGO, ON JUNE 12, 2011, ONE of the great, perhaps the greatest, comeback races unfolded on a lake-like Circuit Gilles Villeneuve. Jenson Button, who two years earlier had claimed a most unlikely World Championship title for Brawn GP, progressed from 21st after 40 laps to first after 70. But that is only half the story.

This was the grand prix that really did have it all: a 24-car grid featuring no fewer than six former and future world champions, red flags, a two-hour rain suspension, five safety cars, punctures, two collisions for the winner and six visits to the pits. In all the race lasted just over four hours. As Jenson remembered later, “It was one of those races that felt like everything was going wrong for the first three and a half hours, but showed that even when it is tough you have to stay positive.”

He started on row four after the McLaren, running with a load of downforce, qualified seventh and almost immediately ran into trouble when team-mate Lewis Hamilton tried to pass on the left down the pit straight. Jenson squeezed him into the wall. “What is he doing?” shouted Button over the radio. Debris littered the track and Hamilton’s grand prix was over.

Down in 15th after 14 laps, having served a penalty for speeding under the subsequent safety car, Button changed to intermediate tyres and was up to 11th by lap 17. Further heavy rain brought the safety car out again on lap 20 before the race was suspended on lap 25.

The drivers then had two hours to dwell upon the race from the pits before the restart, followed by nine laps under safety-car conditions before the track was deemed fit. Three laps after the restart, the safety car was deployed yet again when Button and Ferrari’s Fernando Alonso collided on lap 37.

So it was that Button was last when the race was restarted on lap 40. And now the then 31-year-old began his assault on the GP that has since been dubbed the race of the century. He carved his way through the field aided by astute tyre changes and by lap 55 was fourth – 15sec down on race leader Sebastian Vettel and soon to make his way through to second. During the final stages both drivers appeared on the ragged edge, until on the final lap the German appeared to crack (sound familiar?), sliding wide at Turn 5 and allowing Button through to take a decisive lead with half a lap to go.

“Everything went wrong up until I won the race,” Jenson recalled afterwards. “I crashed with my team-mate, and you never want to do that. Then I crashed with Fernando. Puncture,

THE EDITOR



“On lap 40, Button began his assault in the race of the century”



THIS MONTH'S COVER IMAGE:
Five years on from his first GP win, Lotus's Mario Andretti bagged his second in an incident-packed and sodden Japanese GP in 1976
The Asahi Shimbun

drive through, almost got lapped, was last twice. And you don't think it's going your way.

“Suddenly you see your lap times compared to the others, the team's giving you positive vibes and you're coming through the field, thinking, ‘This could happen!’ I had six corners to enjoy it, but they were the most nerve-racking six corners of my life. Everything's gone wrong, suddenly it's all gone right, so you're very tense, and also very emotional as well.”

I can still remember that race vividly. It happened also to be the year I first met Jenson and Lewis together – larking about during a publicity shoot for a sponsor – and in an era of Red Bull dominance it felt like a real and rare moment of alternative success. It also seems like yesterday, so it is sobering to realise that of the drivers who started the race only three are still in F1 today (Vettel, Alonso and Hamilton).

For a hit of nostalgia, I looked up our report at *Motor Sport's* archive (available via our website). I discovered with some delight that Nigel Roebuck had been our man in Canada.

“A tumultuous race in every conceivable respect,” he summed up. “How often does a driver come through five safety car periods, six pit stops, including a drive through penalty, a puncture, contact with (at least) two other cars – and win a grand prix? I can remember nothing comparable. Button admitted that luck had been with him but perhaps the biggest slice of it came from Emerson Fittipaldi, this weekend the driver advising the stewards.”

The Brazilian had found both of Button's collisions to be racing incidents. “Fittipaldi has always shown himself to be fundamentally ‘on the side of the drivers’,” continued Roebuck, “and not given to dishing out penalties. It would have been criminal to have robbed Jenson of victory. This was a wonderful drive.”

The sentiment surely remains true today: let racers race and see what magic comes.

I should point out that if you want to hear what Jenson has to say about this race (and others), sign up for our *Audience With* event that takes place on June 17. You can buy tickets via the website and ask questions live online. I hope to see you there.

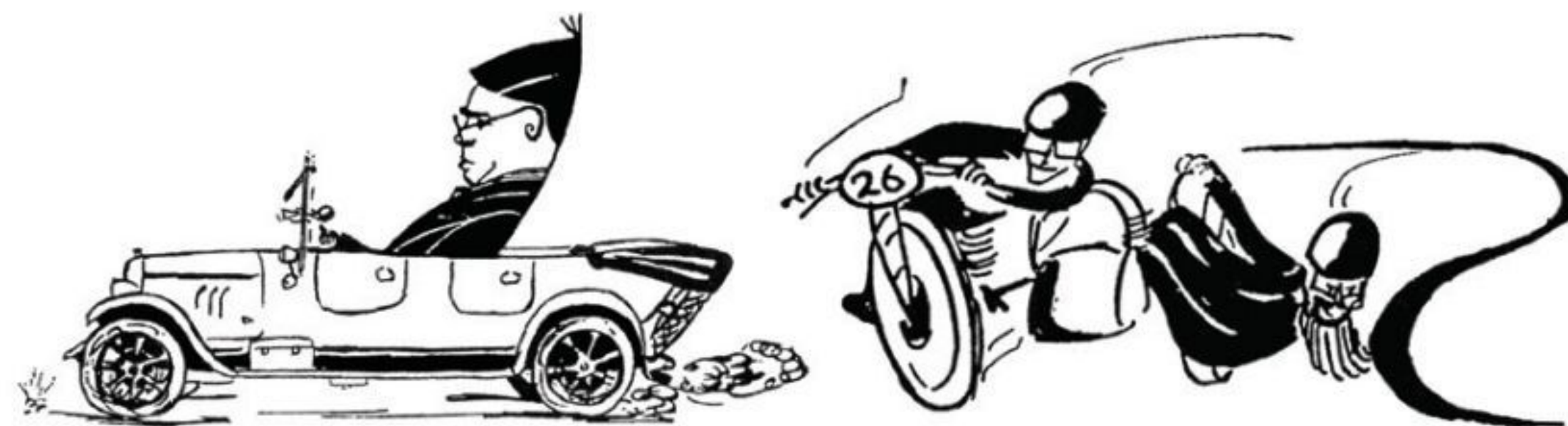
Joe Dunn

Joe Dunn, editor
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MOTORSPORT

IN THE SPIRIT OF BOD AND JENKS



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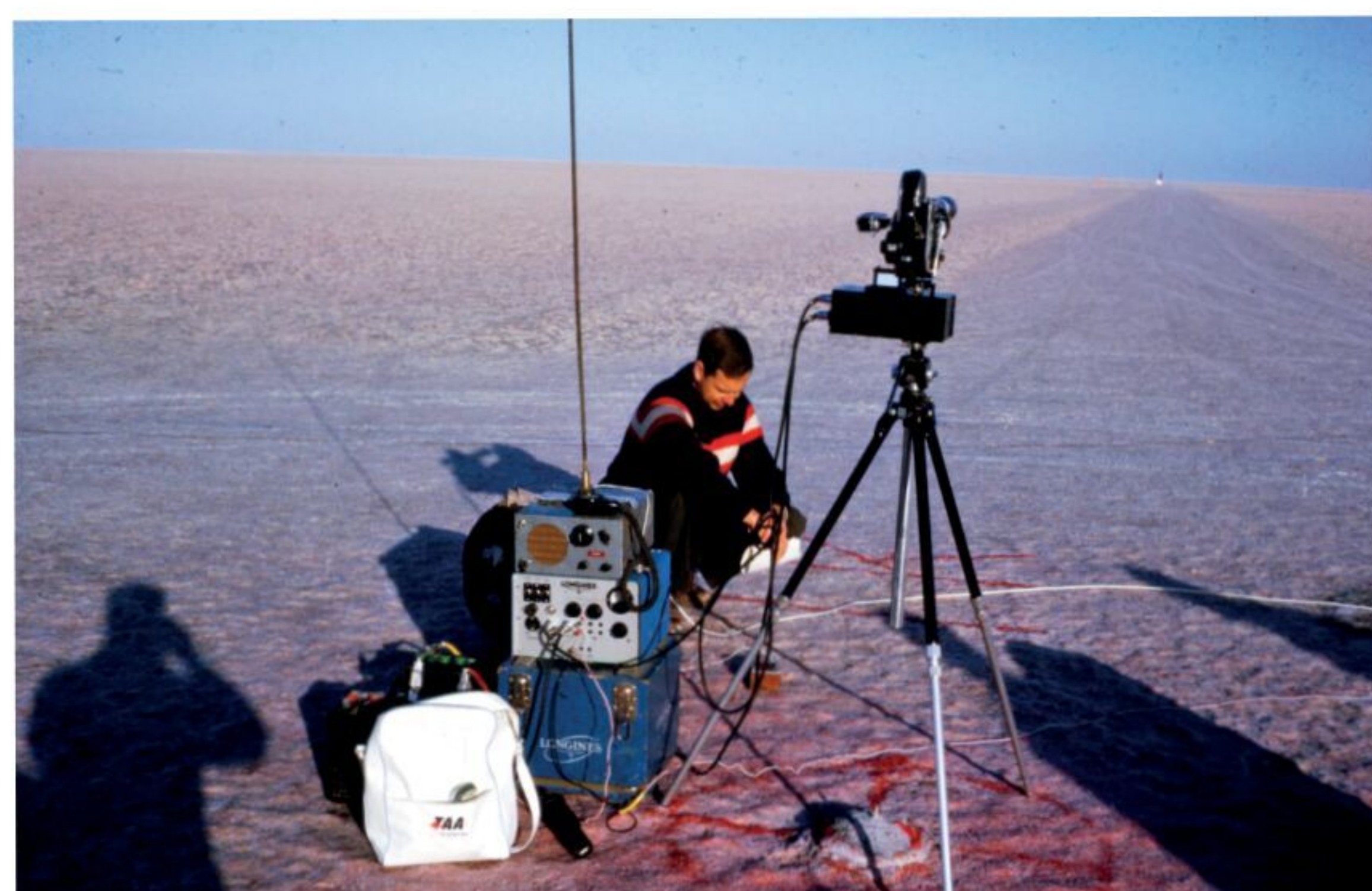


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Details matter.



If you want a Land Speed Record, get someone official to time you and make sure you play by their rules. Donald Campbell's 1964 403.10mph, detailed on page 114, was timed by FIA ratified stewards (*left*). But it had already been surpassed by Craig Breedlove's Spirit of America at 407.45mph – only that was a jet-powered tricycle, which the FIA didn't count. America did though, so for a while Breedlove was the fastest man in the world in the US, and Campbell the fastest man in the world everywhere else...

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MATTERS *of* MOMENT

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**ways to get
back to the
trackside
this year**

Live feeds from tech-savvy organisers have seen us through lockdown gloom but now it's time to pack away the laptop and set out for some serious spectating. Put the following in your diary...





The Donington Historic Festival in May was held behind closed doors, but the coming months offer opportunities to get back to the track

JAKOB EBREY, HOWARD FIELDING/MSF, GETTY IMAGES



British Touring Car Championship

Knockhill, August 14-15

Some folk bemoan the modern BTCC, complaining about shoddy driving standards, the reduced diversity brought about by the loss - 30-odd years ago! - of a multi-class structure, the artificiality of success ballast and so on. If you are in any of those camps, we recommend that you go and watch - and any excuse to visit Scotland should always be taken.

In truth, the multi-class BTCC (and preceding BSCC) didn't always make sense to the wider public because the championship leader was often somebody who picked up maximum points after finishing 14th overall on a good day. And driving standards are, generally, pretty good; contact is usually a by-product of the fastest 25 cars being separated by a second or less per lap - an occupational hazard rather than deliberate malice.

Knockhill is in a lovely location, too, so you can make a very long weekend of it.

Tickets: adult weekend admission £50, family £132, concessions £32. knockhill.com



Yorkshire Motorsport Festival

Holmfirth, June 25-27

We can't tell you much about this, simply because it has never previously been held (last year's inaugural running had to be cancelled). What we can say is that the location - in the heart of the beautiful Holme Valley - is worth visiting even when there is no motor sport on the menu. The first of three days on the freshly licensed hill is dedicated to Bentley, the others are restricted to cars built before 1986. The action is supplemented by live music, displays and - naturally - a spot of lawnmower racing.

Tickets: adult weekend admission from £50, juniors £25, family £75. ymsf.net



FIM Superbike World Championship

Donington Park, July 2-4

It doesn't have the lustre of MotoGP, but it offers parallel spectacle - and is also a bit cheaper to watch. Donington was home to Britain's round of MotoGP from 1987-2009, but lost the event when the track began to fall apart in the slipstream of its failed British GP bid. The Superbike World Championship brought top-level motorcycle racing back in 2011 and has since become a staple - and this year Ulsterman Jonathan Rea will be gunning for a record-extending seventh straight title.

Tickets: adult weekend admission from £55, 13s-15s from £33. msv.com



The Prescott Hillclimb draws entries from far and wide. There are two events this summer – the short and the full course

4

Vintage Sports-Car Club

Prescott, August 7-8

It's a delightful notion that the Vintage Sports-Car Club was founded in 1934, less than 40 years after the car became a practical runabout, and today its family extends from Austin 7s to aero-engined behemoths

The club organises some of the most engaging events on the calendar, including race meetings at Oulton Park (July 10) and Mallory Park (August 22), plus hillclimbs at Harewood (June 5), Shelsley Walsh (July 4) and Loton Park (September 11-12). All are highly recommended, even if some bygone VSCC staples, ERAs, for instance, compete

less regularly than once they did. In contrast, Oulton hosts the new Longstone Light Car race, pitting skimpy Trojan, AV Monocar and a tandem Bedelia together over 40 minutes.

We'll plump for the traditional two-day hillclimb at Prescott near Cheltenham (August 7-8), regarded as the jewel in the crown of the VSCC season. It is the only event that nowadays takes place on the 880-yard 'short' course (on which the very first Prescott meeting took place in 1938). The club will be back at the venue on September 25, for a one-day event on the full, 1128-yard hill.

Prescott's delights include one of the finest paddocks in the land (set in an orchard), excellent clubhouse cuisine (the breakfasts are especially good) and a glorious, photogenic backdrop. For those who choose to walk to the summit (likewise recommended), it is also easier on the legs than some hills.

Tickets: prices TBA. prescotthillclimb.co.uk



5

British GT Championship

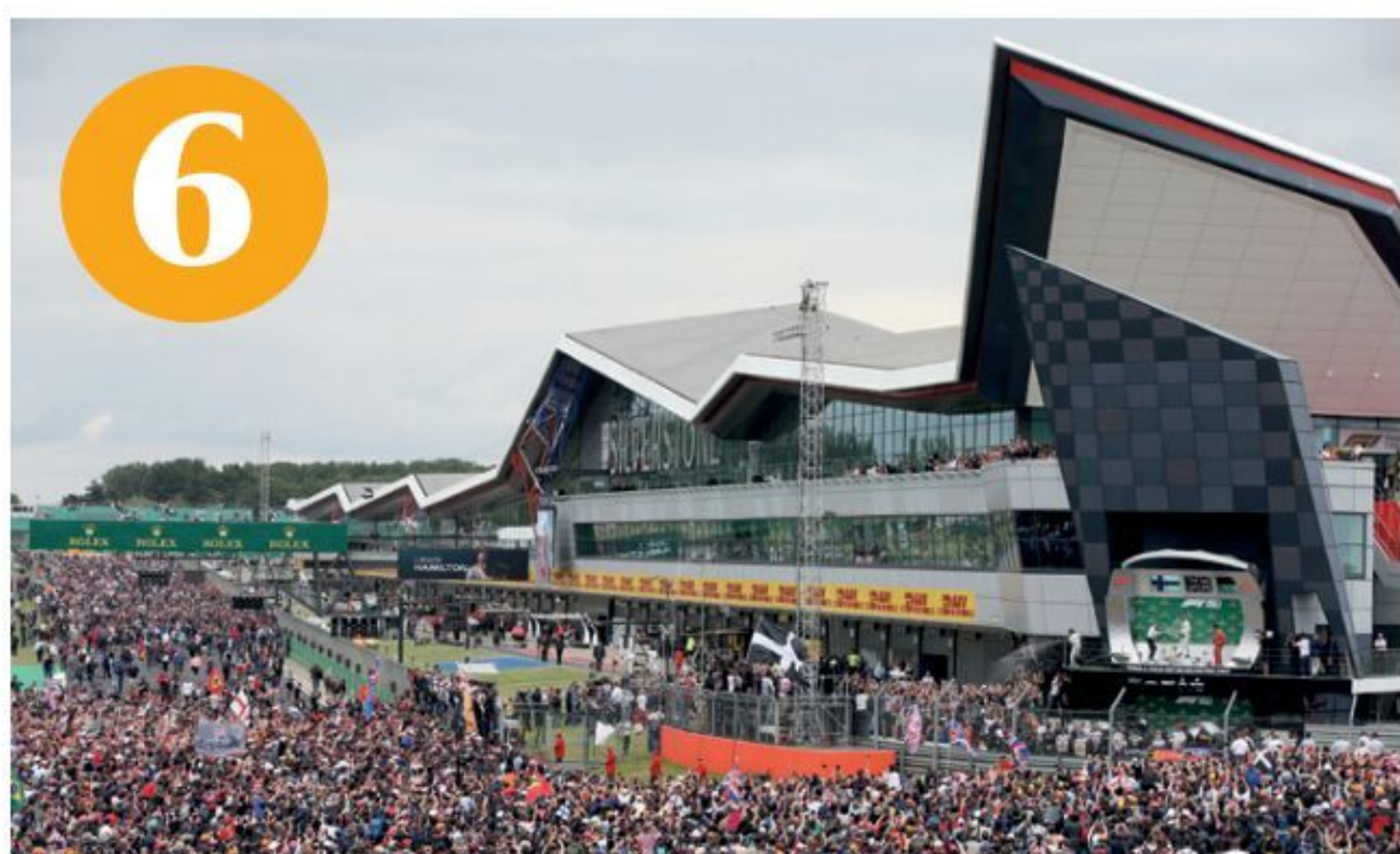
Oulton Park, September 11-12

Postponed from its traditional Easter slot to increase the likelihood of the public being able to attend, this is one of the finest race meetings on the UK's contemporary calendar. The BTCC has the highest profile, but the GT3 segment of the British GT Championship makes the loudest noise. These are proper, brutish racing cars, there are lots of them, the racing is often closer than you'll see in other mini-enduros and there is ample variety, with Mercedes, Aston Martin, Lamborghini, Porsche, McLaren and Bentley all represented in the bigger class. And nothing, but nothing, has the presence of a Bentley GT3 wafting between the trees at full tilt.

The supporting cast is strong, too, with BRDC Formula 3, Caterhams and the bonkers diversity of the Northern Saloon & Sportscar Championship.

Tickets: adult weekend £30, 13s-15s £20. msv.com

SIMON ARRON, GETTY IMAGES



British Grand Prix

Silverstone, July 16-18

Long gone are the days when grand prix tickets were little more expensive than those for typical club meetings, but for many this remains an annual ritual - as reflected in the capacity crowds that line the track when pandemics permit. It helps that this will be the 15th straight season in which Lewis Hamilton has been a contender, but Silverstone has always been busy, even when home interest was diluted.

And no matter how cumbersome you think contemporary F1 cars might look, their capacity to change direction through the Maggots/Becketts complex is a spectacle almost without parallel.

Tickets: general admission sold out, weekend grandstand tickets from £275. silverstone.co.uk



Silverstone Classic

Silverstone, July 30-August 1

The planet's biggest event of its kind, with thousands of desirable cars parked all around the infield and some of the biggest grids - many with more than 50 cars - that you'll see anywhere in historic racing.

Qualifying takes place on Friday, with racing and parades on track throughout both days of the weekend - and live music shows (included in the ticket price) on Friday and Saturday. There is no additional charge for the on-site funfair, either.

There is a lot to see, even for those who buy three-day tickets. In addition to picnic hampers, it is also worth packing a bicycle if you want to make the most of your weekend.

Tickets: adult weekend admission £125, 11s-15s £12. silverstone.co.uk



The NASCAR Whelen Euro Series, the only official NASCAR series outside the US, headlines American SpeedFest 8

8

American SpeedFest 8



Brands Hatch, July 3-4

In a world of often homogenised race meetings, with the same championships packaged together for much of the season, this is refreshingly different - and an absolute hoot. There is some racing involved and we'll get to that in a second, but there is so much more to the weekend. Live music is a staple, as are monster truck rides and bustling displays rammed with American cars. Other past attractions have included BMX stunt displays and hot dog-eating competitions, obviously.

In essence, this is a family day out with some racing attached - and that bit is pretty special, too.

Headline act is the NASCAR Whelen Euro Series, making its only annual

appearance in the UK (and it's on Independence Day weekend too, a first for the event). The cars are loud, large and lairy and the driving cast includes 1997 Formula 1 world champion Jacques Villeneuve and Belgian veteran Marc Goossens, winner of the Formula Ford Festival at the same venue in 1991.

The undercard includes Legends, Formula 5000 and Bernie's V8s, a series with a fairly simple set of rules: cars must have eight cylinders, and drivers can't moan. If you filter from the M25 and find yourself ambling along in a queue composed mostly of Chevrolet Camaros, don't be surprised.

Tickets: adult weekend admission £39, 13s-15s £23. msv.com





9 British Touring Car Championship

Thruxton, August 28-29

Being restricted to 12 racing days per annum, Thruxton has only six events this year - and this is the last of them (although you might also consider the British Truck Racing Championship on July 3-4, or British Superbikes, July 30-August 1).

Almost unchanged since opening in its current form in 1968, the Hampshire airfield's perimeter roads form the fastest track on the BTCC calendar - a rapid contrast to the compact twists and undulations of Knockhill. It produces just as much of a spectacle, however, thanks to some tricky cambers,

those irresistible chicane kerbs and the proximity of competition. And although this will be the BTCC's second visit of the campaign to Hampshire, the first took place behind closed doors.

As an aside, you could make full use of the bank holiday weekend to take in Monday's Countdown Raceday, 45 miles away at Castle Combe, or else pop a few miles along the eastbound A303 to visit the Hawk Conservancy, home to rescued red kites and other raptors.

Tickets: adult weekend £44, family £98, 13s-15s & concessions £5/£10 daily. thruxtonracing.co.uk



Thruxton on a bank holiday weekend...
Where's the umbrella?





Trackrod Rally Yorkshire

Filey, September 24-25

Britain's presently dormant round of the World Rally Championship concentrated on traditional North Welsh terrain when the event last ran in 2019. Its compact modern format precluded visits to many classic stages which featured when the event embraced the length and breadth of the UK, but many of those are still in regular competitive use for other events.

A qualifying round of the British Rally Championship, the British Historic Rally Championship and the BTRDA Rally Championship, the Trackrod Rally Yorkshire covers classic stages including the forest settings of Dalby - under cover of darkness on Friday evening - and Cropton.

Tickets: prices TBA. rallyyorkshire.co.uk



Ferrari Owners' Club of GB

Croft Circuit, June 26-27

Croft goes full-on Italian for this celebration of all things Ferrari. Hosting the annual race weekend of the Ferrari Owners Club of Great Britain, the North Yorkshire circuit will reverberate to the sound of Maranello's finest from the 1970s to the 1990s in its Ferrari Formula Classic, as well as shudder to the thunderous sound of Challenge cars from the 2000s to present day.

There are support races from the Alfa Romeo Championship and the Northern Saloon & Sportscar Championship.

The club's racing schedule then moves on to Snetterton, Brands Hatch, Silverstone, Oulton Park and Spa.

Tickets: day tickets £15, under 16s free. croftcircuit.co.uk



Unlimited bangers

Standlake Arena, August 15

Here's something from the other end of the sporting spectrum - not so much grass roots as mud, mud, glorious mud. Located about 12 miles to the west of Oxford, Standlake is a no-nonsense throwback, with the accent on action rather than facilities (though there is a burger hut and the loos are usable). And short-oval racing is also something we should appreciate while still we can. Following the closure of Wimbledon Stadium in 2017, and its subsequent demolition, London no longer has any such facilities (at one time there were several). Arena Essex (Purfleet), Loomer Road Stadium, Chesterton (Stoke) and Belle Vue (Manchester) have likewise been lost in the very recent past.

It's also worth checking out active venues such as Sheffield, Bradford, Ipswich, Buxton, Skegness, King's Lynn, Northampton, Eastbourne, Lochgelly, Aldershot, Mildenhall, Hednesford Hills, Yarmouth and others besides. "You don't know what you've lost 'til it's gone," as Joni Mitchell once sang.

Tickets: adult £15, family £40, 10s-16s and concessions £10, u-10s free. standlakearena.com





Mini Festival

Brands Hatch, August 22

Here's an event that does what it says on the tin. It has become tradition for in-house promoter MSV Racing to organise several Mini Festivals over a season's course, but in 2021's compressed calendar there is but one.

All the main one-make Mini championships - Se7en, Miglia, Mighty and Super Mighty - feature on the bill, alongside a support cast including the F3 Cup, Elise Trophy and Fastest Mini in the World, which attracts all manner of bewinged evolutions.

Brands Hatch's contours complement the body language of any Mini; one Mini Seven hurtling through Paddock is a vision to behold... and to see a pack doing so is better.

Tickets: adult £22, 13s-15s £14. msv.com



5 Nations BRX

Lydden Hill, November 6-7

It might have lost its round of the World Rallycross Championship to Silverstone, but Lydden will forever be this branch of the sport's true home.

Although it is much more of a summer discipline than ever it was when the de Rooy brothers ruled the roost with their Daf 55 Coupés, the BRX's final visit of the campaign to Lydden coincides with a strong possibility of suitably tricky conditions.

The BRX breaks fresh ground this year, with the admission of fully electric cars competing on level terms with their conventional counterparts, and the date provides a convenient excuse to incorporate a fireworks display.

Tickets: prices TBA. lyddenhill.co.uk



Classic Sports Car Club

Anglesey, September 25-26

The Classic Sports Car Club's motto is simple: racing for cars of all ages. Its inclusive stance guarantees huge fields of all shapes and sizes. If you fancy seeing a Plymouth 'Cuda line up alongside Jaguar XJ6s, Lotus Elans and a sprinkling of Minis, then this is the place. There are a number of intriguing CSCC meetings still to run

this year - including an event on the Brands Hatch GP circuit, when the club supports the GT World Challenge Europe (once known as the Blancpain Series), but Anglesey remains one of the unsung jewels on the UK racing map, with a fabulous layout and glorious coastal location (even when it rains, which isn't unknown).

Tickets: prices TBA. angleseycircuit.com



Plum Pudding races

Mallory Park, December 26

Okay so this isn't a summer event but Mallory Park has kept this tradition festive event alive and combines cars, bikes and - when there are enough entries - sidecars. The shortage of daylight means the whole thing has to be run with peak efficiency, not least because bikes race on a modified version of the track, which involves some ballet from the marshals as they shuffle tyre walls. Grids for car races are set by the order in which entries are submitted, hence the chance of a Citroën C1 on pole.

Tickets (advance only): adult £15, accompanied under 14s free. malloryparkcircuit.com



Raid the vintage clothing shops before Goodwood Revival (or see what's at the back of the wardrobe)



17

Goodwood Revival

Goodwood, September 17-19

Some call it a trip back in time, others refer to it as the motor racing equivalent of Disneyland, some even simply think of it as the most fun you can have in a field with your (vintage) clothes on.

However you prefer to think of it, the Goodwood Revival is a rip-roaring, one-of-a-kind event that really shouldn't be missed. And the best news is it's back on the calendar after a one-year hiatus, and set to welcome back spectators by the bucketload (provided it's all legal and above board to do so, of course).

The Revival is like no other racing event. In fact, you could quite easily attend it and not even realise there is an actual race meeting going on, such is its scale and the breadth of activities on offer.

From car club displays, to multitudes of trade stands, food festivals, fun fairs, vintage fashion shows, live music, auctions and even beauty parlours... oh, and a fair smattering of rather appealing classic cars being driven by some of the biggest names in the sport - there's something on offer for everybody.

To really get into the spirit, get yourself geared up in some vintage finery - and it doesn't have to cost the earth. Charity shops are a goldmine for used tweed and flat caps, or even that 1950s-style polka dot dress. There is no demand to dress up, but trust us, you'll oddly feel out of place if you don't. Plus half of the fun comes when filling up with fuel dressed as a period evocation of a Bentley Boy outside of the Goodwood time warp...

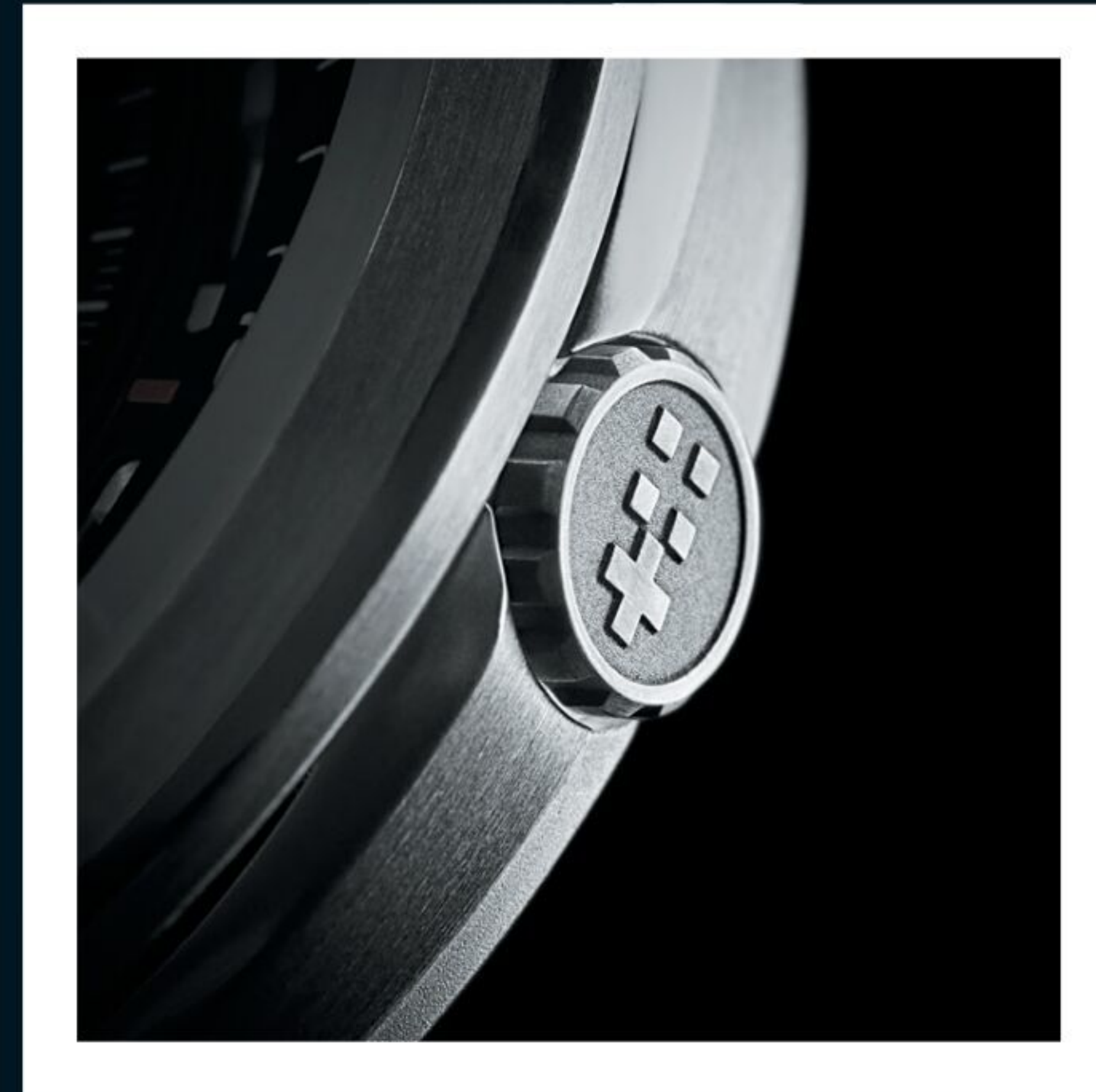
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MARK HUGHES

"I have a theory which offers hope that we will still see a tight battle"

AS WE TOUCH UPON IN THE race reports of the two grands prix which have taken place since the last issue, the pattern of the season after four races suggests a narrative of Mercedes, having begun the season at Bahrain behind Red Bull, has since closed the gap (at Imola), drawn level (Portugal) and pulled ahead (Barcelona) at each subsequent race. Which has brought an inevitable sense of disappointment after seven seasons of unrelenting Mercedes championship domination, as Lewis Hamilton has won three of the first four races.

But actually, wait. I have a theory which offers hope that we may still see the tight battle that the opening couple of rounds promised. The two cars are quite different in their concepts and performance patterns. It may just be that the sequence of circuits visited so far emphasises different aspects of each car in a way that has coincidentally played out in a manner which suggests this narrative of Mercedes hauling in Red Bull's initial advantage and proceeding to pull away. Had we experienced those races in reverse order, we might be looking at a story that suggested Mercedes having an initial advantage and Red Bull gradually clawing level and then ahead.

Stay with me on this. It could be wrong, it's just a theory and the Monaco race will have taken place by the time you read this - which could have either destroyed or given added credence to the theory. But the technicalities behind it are valid regardless. It goes like this.

The regulation aero restrictions of this year have definitely hurt the low-rake

Mercedes concept more than the high-rake Red Bull one, for reasons which we looked at in detail in this column last month. Compared to last year, the first four races suggest that Mercedes is 1.5% slower, the Red Bull only 0.6% slower.

Each circuit presents its own unique set of equations to solve, with variation in corner speeds, different length straights, track surfaces, etc. Generally, the high-rake car has more set up options available to it since the desired balance shift towards the front as the speed falls (the rake increases as the speed falls, shifting the aero balance further forwards than on a low-rake car) is more enhanced. So there is a bigger window available to exploit between the limitations of slow-corner understeer and fast-corner instability.

At Bahrain, the problem corner for the Mercedes was the hairpin of Turn 10 where the combination of lateral and braking load downhill was too much for the front end. The combination of Turns 5-6 - where the front is loaded up one way and is being asked mid-load to change in the other direction - was also a problem. The Red Bull with more balance shift at low speeds to counter

understeer could be set up to be more agile. Within the constraints of the narrower window, the Mercedes was a little inert around Bahrain.

At Imola the Red Bull was still quicker - and for very similar reasons. The Rivazzas set quite a similar challenge to Bahrain's Turn 10. It appeared that Mercedes, with its new diffuser, had made progress and probably it had. But the reality was that if both Red Bull drivers hadn't made crucial mistakes on their Q3 laps they'd have locked out the front row.

In Portimão the Mercedes genuinely was as quick as the Red Bull. The flow of the corners didn't demand such a compromise and the Mercedes could be kept in its set up sweet spot relatively easily. Couple that with the gentler way the Merc uses the tyres - because its weaker front end doesn't give such abrupt load changes to the rears - and that gave Hamilton the cool tyres needed to stay close to the car ahead through Turns 14-15 onto the pit straight. Which was the key reason that he was able to pass both Verstappen and Bottas to win the race.

In Barcelona that tyre trait was even more important than in Portimão - because this is a tyre-degradation track, where the whole strategy is based around how quickly your tyres lose performance through thermal degradation. So even though there was nothing between the two cars over a lap, over a sequence of them the Mercedes was comfortably faster.

These are all just track traits determining which of the two cars is faster and each track is offering up a new piece of the jigsaw. The Red Bull can be loaded up with more raw downforce than the Mercedes - but often it's not usable because the drag penalty is too great. At Monaco both drag penalties and tyre deg are pretty much irrelevant; it's about downforce, grunt and balance - and a great driver (which both cars have).

The calendar during these uncertain pandemic times is still a very nebulous thing and the array of tracks F1 eventually ends up visiting could well have a profound effect on the competition between these two teams. But the message for the moment is: it's way too early to declare that Mercedes has got this.

Since he began covering grand prix racing in 2000, Mark Hughes has forged a reputation as the finest Formula 1 analyst of his generation. Follow Mark on Twitter @SportmphMark

"The aero restrictions this year have hurt Mercedes more than Red Bull"



MAT OXLEY

"The start is so crucial in MotoGP, which has led to a new technology race"

YOU DON'T NEED TO BE A GENIUS to understand why it's easier to overtake in MotoGP than in Formula 1. But as MotoGP machines become more closely matched - due to improving technology and tighter technical regulations - the act of executing a passing manoeuvre grows more complex.

That's why qualifying and the start are now so crucial in MotoGP. Inevitably this has led to a new technology race, with so-called holeshot devices.

The best way to make a MotoGP bike accelerate away from the grid isn't by adding horsepower or improving traction, it's by reducing the amount of front-wheel lift. Racing motorcycles are tall and short, so they want to loop over backwards when full torque is applied to the rear wheel.

The concept of the first start gadget, created by Ducati in 2018, was to transform its 300-horsepower Desmosedici MotoGP bike into a long-and-low drag bike for the first few hundred yards of each race.

The device pumps down the rear shock to squat the rear end, reducing the bike's tendency to wheelie. Immediately Ducati riders had an advantage at the start, so MotoGP's other five factories - Aprilia, Honda, KTM, Suzuki and Yamaha - quickly copied Ducati's lead.

Aprilia's first effort lowered the front of the bike by locking the forks on full compression, an easier and cheaper solution to the problem, if not quite as effective. Now all but two factories have both front and rear devices.

These inventions may allow faster getaways, but they make the rider's job more complicated, largely due to the fact that the gadgets are operated mechanically and hydraulically, because electronically adjustable suspension isn't allowed.

When the rider returns to the grid following the warm-up lap he engages the front device by physically compressing the front suspension,

then turns a lever to squat the rear. Finally he engages the launch-control software, which limits torque to reduce wheelies, but not very well.

"The starts now become difficult, but with these devices you go like a rocket!" says Aprilia's Aleix Espargaró. "Before pre-season testing my engineers explained the start procedure to me and I thought, I need to go to university!"

Despite these clever contraptions the rider still plays the decisive role in making a fast getaway, firstly with his reactions, secondly in the way he controls the bike immediately after the launch.

"It's a big work between the right hand and the left hand, with the throttle, the rear brake and the clutch," says KTM rider Danilo Petrucci, who, like everyone else, uses the rear brake to minimise wheelies during fierce acceleration.

"You try to release the clutch as early possible and you try not to get too much wheelie or use too much rear brake and not close the throttle too much. It's a mix between these three which allows you to do a good start - it's like playing a musical instrument.

"If you make a bad start you're starting from zero. Your race isn't over but making a lot of passes will affect your tyres and that affects your race strategy."

Ducati rider Jack Miller believes that good starts are mostly in the mind.

"It all comes down to reaction times," says the Australian. "Some guys have better reactions than others. If you can get a jump on the others it's massive!"

"I generally watch the starts of the Moto2 and Moto3 races. I watch the lights and I count until they go out - one, two, three. Okay, they're going on three, more or less..."

"I try to not get too much temperature in the clutch. As soon as the guy with the flag walks off the grid I bang it into gear and I'm just

watching the lights. The lights come on, you're revving, and it's, one, two and... you almost anticipate it.

"Then it's all in the clutch. I give it a handful, the bike leaps forward a few metres, I catch it back with the clutch and feather it from there, rather than screaming it out with the clutch from the beginning."

Immediately after the launch the rider aims for the best entry point into the first corner, while trying to avoid his rivals who are all going for the same bit of asphalt.

Miller again: "I sit right up against the fuel tank and get my elbows up, so I can muscle the bike where I need to. You need to be on top of it, so you're more in control. If you use your body to control the bike it becomes upset, so I keep my core quite central and use my legs and head to control where the bike is going. If I need the bike to go that way I'll use that leg to sway the bike that way.

"It was scary towards Turn One, Two and Three, like a chopper!"

"When I shift to second I get my feet on the pegs and then in third and fourth I start managing the wheelie with the rear brake, though I still do most of that with the clutch."

The start devices disengage when the rider hits the brakes into Turn One - in theory. At Silverstone in 2019 Miller's didn't disengage, leading to an interesting first few corners.

"It was quite scary towards Turns One, Two and Three, like a chopper! Basically I had to do a stoppie [brake so hard that the rear wheel lifts off the ground] at Turn Four to free it up."

And at this year's season-opening Qatar GP the same problem affected Franco Morbidelli's Yamaha throughout the race; a disastrous start to the title contender's 2021 campaign.

Mat Oxley has covered motorcycle racing for many years - and also has the distinction of being an Isle of Man TT winner
Follow Mat on Twitter @matoxley



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SPORTS
PURPOSE



DOUG NYE

“A glorious home win for Ernest Ballot’s team had been predicted”

ONE HUNDRED YEARS AGO COME July 25 - America (with help from German and Irish immigrant genes) won the 1921 Grand Prix of the Automobile Club de France. That first post-WW1 international Grand Prix race comprised 30 laps of the 10.75-mile Sarthe circuit at Le Mans. A glorious home win for new French manufacturer Ernest Ballot’s team of 3-litre straight-8 twin-overhead camshaft cars had been predicted, but it had been foiled.

The German-born brothers Fred and Augie Duesenberg had entered their own team of similarly specified Indianapolis-bred cars, and with their fearless and relentlessly rapid lead driver Jimmy Murphy - son of Irish immigrants - they defeated the French on home soil...

While none of the Duesenberg children had much formal education, both Fred (born Friedrich) and Augie (August) showed mechanical aptitude. Fred began racing bicycles, built his own, then in 1900 attached a petrol engine to one. Through creating Rambler, then Mason and Maytag-Mason cars the brothers developed 4-cylinder and then straight-8 designs which quickly earned respect. In 1913 they founded the Duesenberg Motors Company Inc and in 1914 Eddie Rickenbacker placed 10th in the Indy ‘500’ in a Duesenberg.

During World War 1 the brothers worked on Government contracts. Fred was the father figure and engineer, four-years younger Augie, a natural practical craftsman mechanic.

Postwar, in France, on Christmas Eve 1918, former Peugeot engineer Ernest Henry was commissioned by marine-engine manufacturer Ernest Ballot to create a team of racing cars to promote an image of technical excellence. They were to run at Indy in the 1919 revival ‘500’ - so had to be ready for shipping in just 120 days.

Henry drew Peugeot-like chassis and in effect coupled two 4-cylinder engines into a straight-8. These new Ballots shone at Indy, fastest in practice but were beaten into second.

Back at Indy in 1920, Gaston Chevrolet won in his Peugeot-inspired Monroe - but Ralph de Palma had led until the last 35 miles for Ballot. René Thomas’ Ballot was second, and the latest Duesenbergs 3-4-6.

Into 1921 American racing’s 3-litre capacity ceiling was adopted by the ACF for their resumed Grand Prix. At Indy that year Tommy Milton’s Duesenberg-inspired, Miller-engined straight-8 Frontenac won. Italian-born American Ralph de Palma’s Ballot had led for 200 miles - but failed yet again.

By this time the Duesenbergs were desperate for major success. Ballot was loudly promoting his products’ moral ascendancy. For the revived GP, Ballot confirmed four entries to be driven by Louis Wagner, Jean Chassagne, Jules Goux and de Palma. With backing from the American Automobile Association, the City of Indianapolis and Albert Champion - the Frenchman whose US spark plug business had made his fortune - Duesenberg also entered four Indy-derived cars for Americans Jimmy Murphy and Joe Boyer, plus Frenchmen Albert Guyot and Louis Inghibert.

Duesenberg’s arrival was last minute but the cars were well prepared, with Augie as chief engineer, and American road racer George Robertson as team manager. The Duesenbergs were unique in using hydraulic brakes instead of rod and cable. Early brake balance problems saw Murphy suffer a lock-up avoiding a bolting horse while returning to Le Mans after practice. The car overturned in a ditch, breaking Inghibert’s ribs and injuring Murphy’s less severely. Murphy was released from hospital for the race, but Inghibert’s car was rented to French driver André Dubonnet.

Ernie Olson, Murphy’s riding mechanic, had noticed that Ballot used far smaller brake drums at front than rear. Duesenberg’s were same-sized all round. Olson suggested to Augie

they hack away 2in of the metallic lining from their front brake shoes to match. Boyer tested the modified car with Olson alongside, who recalled: “We hurtled down the straight, he hit the brakes and the car just squatted. It tried to bury itself in the road without a bobble. We really had it over the French after that...”

From the staggered start de Palma appeared to cruise, while the Duesenbergs blazed round 1-2. Murphy led from team-mate Guyot. De Palma, urged on by riding mechanic nephew Pete de Paolo, inherited second place despite a stone-punctured fuel tank. But on lap 29 another flying stone punctured leader Murphy’s radiator. A tyre also burst. The Duesenberg slewed into the pits. Olson changed the wheel. Murphy (illegally) kept the engine running while hot water was poured into the leaking radiator. Back in action it soon boiled dry. With eight miles to go another tyre deflated. Only the straight-8’s large oil-cooling area kept it together for those last miles. Waving in triumph, Murphy

and Olson bumped across the finish line to win the Grand Prix for America. They had averaged over 78mph for the 322 miles, Murphy left the Sarthe lap record at 84mph while his last lap had averaged only 59. Still the Duesenberg finished more than a quarter-hour ahead of de Palma.

As after Mercedes’ crushing defeat of Peugeot (and *La France*)

in the 1914 Grand Prix, the winning nation’s anthem was not played after the finish. Ernest Ballot was incensed, raving, “Let’s do it again! We’ll see who keeps going to the finish!”

But the names of Jimmy Murphy and the slender - though two-seat - Duesenberg had already been inscribed in the Grand Prix record book. Now here’s a centenary to savour.

“Duesenberg’s arrival was last minute but the cars were well prepared”

Doug Nye is the UK’s leading motor racing historian and has been writing authoritatively about the sport since the 1960s



ANDREW FRANKEL

"All declared projects, from Valkyrie to Valhalla, will continue as planned"

LAST AUGUST, TOBIAS MOERS, THE former boss of Mercedes-Benz's AMG division, swept through the doors of Aston Martin's Gaydon factory to take up his position as the beleaguered company's new CEO. And promptly fell completely silent. Save the usual PR-scripted quote at the end of some press releases, he said nothing. Nothing that might provide us with any inkling of his vision for the company, how it would recover from the mistakes of its past and define its future.

My requests for an audience were if not declined, then politely postponed, so I was forced to fall back on what I knew. Which was that Moers' character is about as far from that of Andy Palmer whom he replaced as it is possible to imagine. Palmer is approachable and affable, while Moers has the reputation of having a rather less collegiate approach and scaring motoring journalists in particular.

And yet I've interviewed him at least a dozen times and, while he may say otherwise, I always felt we'd got on. The only thing I want a CEO to do is answer the questions I ask. If some of those answers are 'I don't know' or 'I do know but I'm not telling you' that's fine. What I find difficult are those who use my time to answer the questions they'd liked to have been asked. And Moers never, ever does that.

Then, from nowhere, an invitation. I had an hour to fire as much at him as I liked - no areas off limits. Would I like it by Zoom or in person? I wasn't going to not show up for that.

When I emerged from the boardroom what struck me most was not how different were his plans to those of his predecessor, but how similar. I thought he'd be culling model ranges, shutting one of its two factories because neither is remotely close to capacity and offering the company on a plate to his former employer which already owns a 20% stake and with whom he remains on extremely good terms.

Not a bit of it. Every car that exists today will continue from the Vantage, DB11 and DBS

sports cars to the DBX SUV. All future declared projects, from Valkyrie to Vanquish with Valhalla in between, will continue as planned. St Athan and Gaydon will remain open. With so little change in vision, you might ask why the board felt Andy Palmer needed replacing.

For Moers however, the problem lay not with what Aston Martin was doing, but the way it was doing it. "So much money was being spent which could be saved. We had two assembly lines at Gaydon when all the cars built there are on the same platform. So we shut down one. In time it's where the mid-engined cars will be built. We used to have 70 stations per car, now we have 23. When I got here we had more than 400 sports cars at some point in the process of being built, now we're down to almost 100, yet we're still delivering the same number of cars every day.

"We have a new paint shop in St Athan which is only efficient if it's running all the time, so now all our cars, apart from those with special paint, will go there, not just DBXs. At Gaydon we had 70 people fixing faults on cars after they came off the production line. Now we build better-quality cars on the line but with that has come a 35% increase in efficiency, where in the world I come from 3-4% is pretty good."

Moers has also drained the market of stock, reduced warranty claims "by a substantial double-digit percentage", reduced discounting and seen residual values start to rise as a result.

On the product side and at least for now he is concentrating on improving and adding to what he already has. So expect more variants of existing cars soon, including a plug-in hybrid DBX by the end of this year and a V12 Vantage at some unspecified date in the future. All the sports cars will be re-engineered in time for their mid-life revisions with big power upgrades now that Aston Martin can have the pick of the

AMG powertrain toy box rather than getting what it was given and being grateful for it.

But beyond that? Ah yes. Moers sees no alternative to all new production Aston Martins (so not facelifts of existing product) being fully electric after the middle of this decade. He insists that with a decent charging infrastructure reducing range anxiety and advances in battery technology, there is no need for an electric Aston to be overweight and soulless. On that point he describes the task of creating an Aston EV that is genuinely fun to drive as easy. "With the right battery, the right powertrain layout with an individual electric motor at the back and maybe two at the front, fun is easy."

I struggle to see it myself, even if as Moers suggests his EVs synthesise the sound and vibration of an internal combustion engine. But those cars are a distance away. For now with the company cash-positive in the first quarter of this year for the first time in far too long, we should be pleased at his decision not to change the ship, but focus on pointing it in right direction.

DID ANYONE ELSE SHARE MY disappointment when Audi announced it and Porsche were to collaborate on their new LMDh race cars for the 2023 season? Is it not enough that this category is already so tightly regulated that

every significant dimension is preset, as is power output and downforce to drag ratio, that their hybrid system is off the shelf and their chassis choice limited to just four? What's left? The same car with different styling. It may work for customers on the public road, but as a philosophy by which to go racing, I don't believe for a moment it's what fans want to see.

"I thought Moers would be culling ranges and shutting a factory"

A former editor of *Motor Sport*, Andrew splits his time between testing the latest road cars and racing (mostly) historic machinery
Follow Andrew on Twitter @Andrew_Frankel

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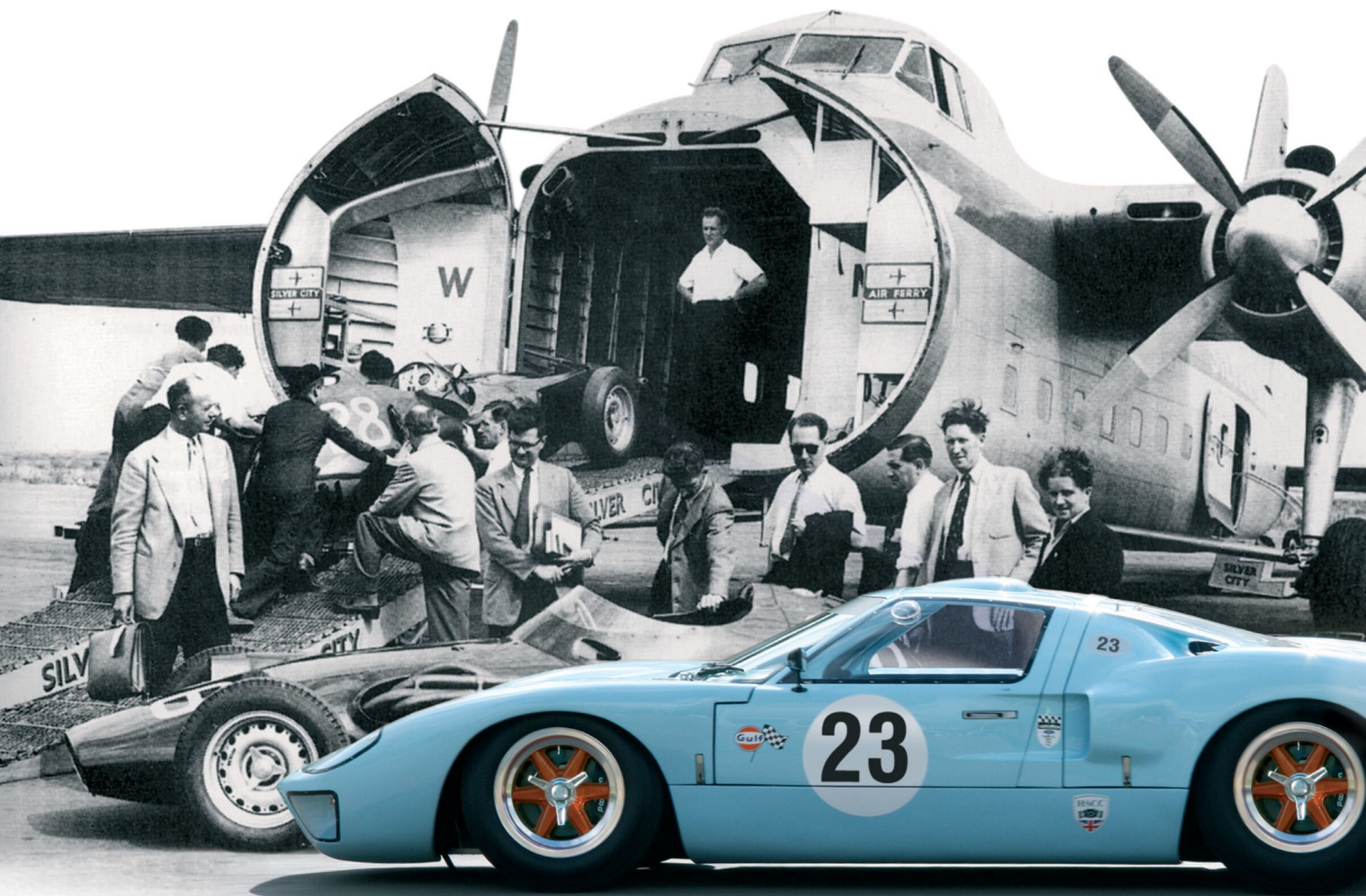
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Trackside view

After initial speculation that the F1 season might give us at least a two-horse race, Mercedes has other ideas.

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 Portimão GP  Spanish GP

Mercedes gives them the old one, two

And in more ways than one. Hamilton is on a charge, and a superb tactical gamble paid off hugely in Spain, says **Mark Hughes**





Having been trounced by Red Bull in Imola, Hamilton struck back with a dominant performance of his own in Portugal



THESE TWO EVENTS WERE something of a cold shower for the hopes raised by the first two. Bahrain and Imola had suggested a closely-matched title slug-out between Lewis Hamilton/Mercedes and Max Verstappen/Red Bull. It's not that Verstappen wasn't in there fighting in Portugal and Spain - he was. It's just that Hamilton and Mercedes emerged on top both times to make it three from the first four and that 'Mercedes success fatigue' seemed to hang in the air after seven straight seasons of dominance.

But actually, when analysing the patterns of performance over each of the four races, the winning differentiator on each occasion has varied. So it might just be that the

sequence of the tracks in the calendar and how they reward/punish different aspects of performance has given a false narrative. Or it may just really be that Mercedes started behind, drew level and by Portimão and Barcelona pulled ahead. A third reading of the situation is that the multi-faceted nature of Hamilton's brilliance in this mature part of his F1 career is making the crucial difference.

How much is the car and how much is the driver? That age-old question was posed extremely strongly in these two races where Hamilton's route to victory was different each time.

Around a windy and gripless Portimão it was Hamilton's cooler tyres which allowed him to sit hard in the wake of the car ahead through the long winding downhill final two turns and thereby remain close enough for DRS to be effective. This won him the race. Verstappen couldn't do this - and that difference was crucial after they had each run behind pole-sitter Valtteri Bottas right from the start.

Bottas led from Hamilton and Verstappen initially but an early safety car

gave Verstappen the opportunity on the restart to jump Hamilton, who just happened to be looking in his mirrors to see where his rival was as Bottas ahead of them gunned it, allowing Verstappen to react quicker. For the next few laps Verstappen was giving it everything in trying to pass Bottas, who didn't like the balance of the Mercedes on the medium tyres on which all three of them had started. Verstappen would be pushing and probing throughout the lap, terrier-like in his attack, never relenting.

"But I just couldn't get close enough in those last two corners and then the run onto the straight. It was the same later when I was behind Lewis. We just weren't quite quick enough there."

But why? When looking at the speed profile of the two cars when they each set their fastest laps (which came without DRS in both cases), they were virtually identical. The difference was Hamilton's ability to come onto the straight inches from the car ahead without his tyres overheating and forcing him to lose ground. Was it a car trait or something Hamilton was doing? It could

"Hamilton's brilliance in this part of his career is making the difference"



Bottas broke the Lewis-Max stranglehold on pole positions, but faded back in Portimão



Mutual respect, but a growing rivalry regardless. Hamilton vs Verstappen promises to be a great battle this season

of course have been both, but it was quite clear that Hamilton's attack followed a very different pattern to Verstappen's. Rather than harrying the car in front throughout the lap, Hamilton would typically drop back through the twisty middle section where passing isn't feasible. He'd then close up at will into the hairpin of Turn 13 - and your speed out of there determines how quick you will be through the long, fast double loop and onto the pit straight. Were Hamilton's tyres cooler because he ran less aggressively for much of the lap? Was it that which allowed him to close right up under braking into the harpin? Have better traction out of it? And to retain front grip even when tight in the slipstream of the car ahead? Because all those things were true - as was the fact that Hamilton was often to be seen on an offset line to the car ahead, coming out of 14, allowing his front wing to work. As was the fact that Hamilton - unlike either Bottas or Verstappen - was staying off the serrated exit kerbs of turns 5 and 8. The significance of that? "When you drive over those serrations," said a very recent ex-F1 driver, "it puts a lot of extra heat into the tyres because the rubber is suddenly expanding and contracting. Hamilton was

GRAND PRIX PHOTO, GETTY IMAGES

As (not) seen on screen

Why Portimão presents a bigger challenge than you think

The feature the TV cameras really miss about Portimão is its elevation change. There's an 85metre difference between its highest and lowest points. Stand at the exit of Turn 7, a fast downhill right-hander, and look behind you and down - and you have a great plan view of Turn 3, a hairpin. The aroma of exotic fuel blends drifts up on the stiff breeze. Charles Leclerc is the first to attack the hairpin on this Friday morning, and the Ferrari on medium tyres doesn't have anything like the chemical bonding with this gripless surface to match Leclerc's ambition, but he's comfortably able to control the consequences. He scrubs the speed off sideways between turn-in and apex.

Turn around and watch him through T7 and the Ferrari yaws early into the turn and gradually takes up a set, the slow

change in attitude very much in contrast to the high speed of the corner itself. A Mercedes or Red Bull through here just grips immediately; there is not the same transition in attitude. The difference in speed is probably nothing; the Ferrari isn't actually losing out on lap time to the lazier change at this point, but it's probably putting an altogether different load pattern onto each of the four tyres. Some are going into this turn off-throttle, using that to pin the car in. Others are braking earlier and turning in on the gas.

As the session goes on and the surface begins to offer up at least a little more, so the high-grip cars begin to approach this corner in a slightly different way; Lewis Hamilton will take two bites at it, a small initial one then another from

part way-across the track's width when he's almost at the apex. It's allowing him to maintain speed for longer into the turn but requires the grip to allow him that late extra input. The Ferrari would only just have got its yaw angle stable by this point. Lando Norris (left) is hustling a McLaren with a high-speed, high-grip understeer, which looks very driveable.

As they exit T7 and brake hard for the tight uphill right-hander of T8, Hamilton has got the perfect rotation into the turn, braking into it but coming off at just the moment the car is ready to accept plenty of throttle. It's a seamless transition. Max Verstappen is braking later there, but it makes for a messier transition. The telemetry will reveal if he's gaining more going in than he's losing coming out of the corner.



TV cameras just can't quite convey the elevation change of a track like Portimão

hardly ever on those kerbs. The other two were on them every time.”

But it was also true that the Red Bull more readily puts heat into its tyres anyway. We’ve seen that pattern in all the races to date - how Verstappen can always nail a time on the first flying lap and how the Merc drivers, Bottas in particular, sometimes need two. That quick warm up is a great boon for Red Bull in qualifying, but may have made the winning of this race impossible for Verstappen. Maybe the only way Verstappen could have won this race would have been to control it from the front - which he might have done had his first Q3 run, good for pole, not been deleted for crossing track limits at Turn 5 when a gust of wind took him out wide.

Instead it played out with Verstappen getting into a bit of a tank-slap through turn 14 as he tried extra hard to stay in



Verstappen was forced to race solo against the Mercedes after team-mate Perez's issues in qualifying

Bottas' wake - this was all the closely-following Hamilton needed to slipstream past the Red Bull to retake second place. A few laps later and Hamilton took advantage of Bottas' slower entry onto the straight to get a good DRS run going on him, then pincerd him into Turn 1 and going the long - but faster - way around the outside. Once in the lead, Hamilton was gone. Verstappen later jumped Bottas for second around the

pit stops. Having pitted first, Verstappen's tyres were warmer as Bottas on his new, cold tyres locked up into Turn 3 - and Verstappen pounced.

Three laps from the end, with a big gap behind to the 'best of the rest' Lando Norris, Mercedes brought in Bottas for a new set of tyres with which to get the fastest lap point. The team brought him in a lap too early, for it created the space for Red Bull to bring Verstappen in next lap, and on the last lap he duly eclipsed Bottas' time - only for it to be immediately deleted for track limits. But while they were scrapping over the white lines for the final point, Hamilton was 25sec up the road and 25 points to the good. It may have been a 'car' victory over Red Bull; it's too early to say. What is certain is that Hamilton stacked absolutely everything in his favour and possibly in doing so overturned the natural car order on the day.



Verstappen got the better launch when the lights went out in Spain and squeezed past the Mercedes into turn one. His momentum wouldn't last though

The demands were altogether different in Barcelona. Here was a grippy, abrasive surface and a series of long turns, giving the tyres no time to recover in between. The tyres will always overheat here, the performance will always steadily drop away lap by lap. The more aggressive way the Red Bull works the tyres looked set to be a problem, much more so than at Portimão, where they get plenty of time to recover and where the gripless surface doesn't induce as much heat anyway.

Red Bull was acutely aware of this coming in. Throughout Friday in Barcelona it ran with a big tyre-protecting rear wing, smothering the car in downforce. It seemed to work - in that Sergio Perez's Red Bull set the fastest long run time of all, albeit by almost nothing over the two Mercs. Verstappen suffered a disjointed practice after twice damaging his front wing over the

newly extended sausage kerbs on the exit of Turn 7. Encouraging though Perez's pace was, a comparison of the straight-line speed between the Red Bull and the Mercedes suggested this wing would make the cars sitting ducks to Merc in the race, even if they could qualify ahead.

It was a luxury the team couldn't afford. From Saturday onwards both Red Bulls ran rear wings with a smaller spoon-shaped section underside, with the draggy outboard ends cut away. It would lose the team the race in a different way to how it would have been lost with the bigger wing. Around Barcelona, there wasn't a window for Red Bull between the conflicting demands of protecting the tyres and protecting its position at the end of the straight. In hindsight, the only way it might have won the race was for Verstappen to have shadowed Hamilton and tried for the undercut later. But even that would probably have been doomed - for the Red Bull was just harder on the tyres.

Instead, Verstappen sliced aggressively inside Hamilton into Turn 1 at the start of the race, the Merc driver having to take evasive action to avoid contact, and Max then set about driving at what he judged to be an appropriate pace for a one-stop. All the while Hamilton shadowed him, just far enough back to protect the front tyres. Their pace left the others far behind, including their respective team-mates. Bottas had

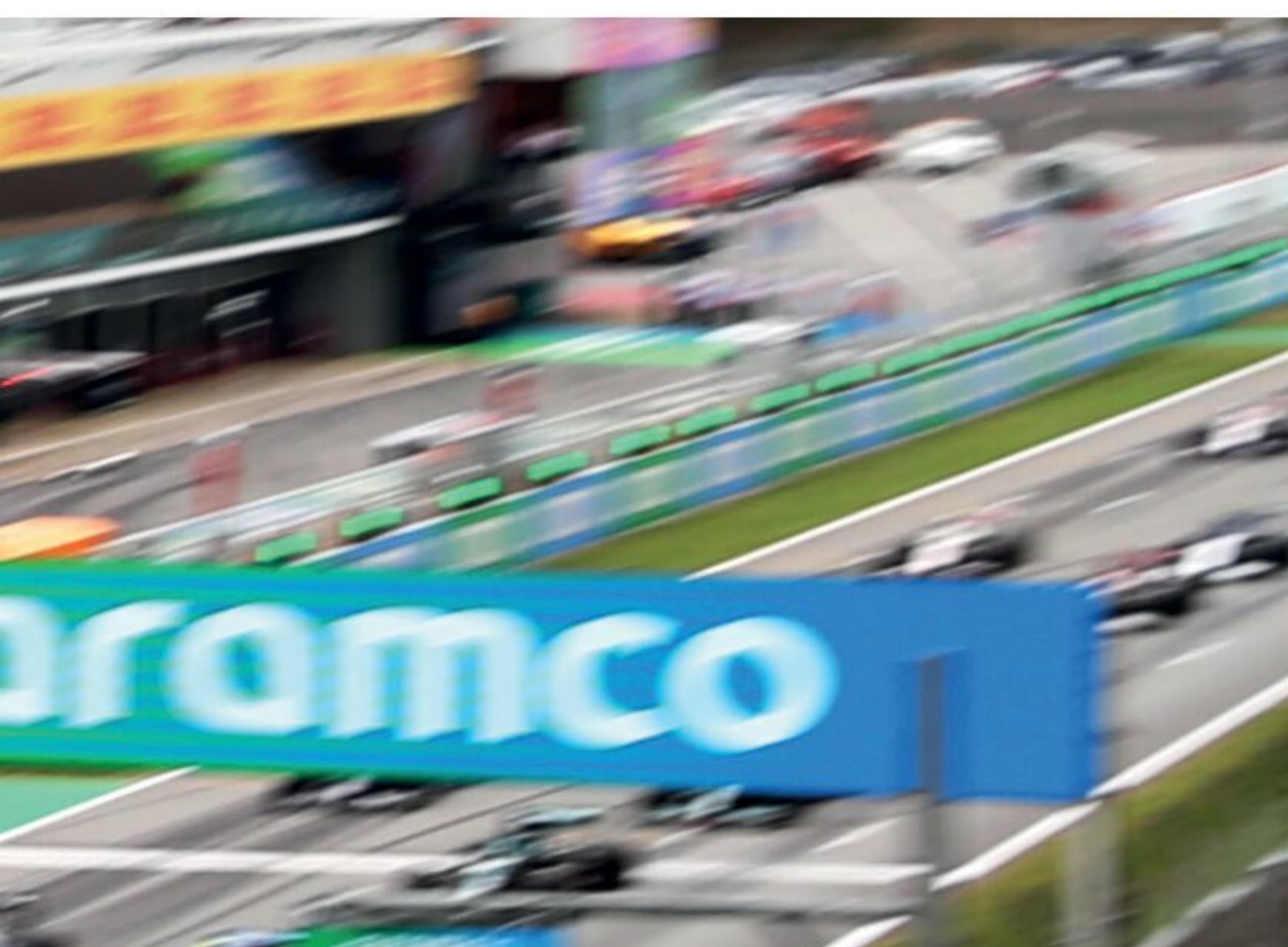
been passed on the first lap by Charles Leclerc's Ferrari and was stuck there until the first stops, though a lap 10 safety car (for Yuki Tsunoda's broken-down AlphaTauri) gave him some of the deficit back and he was later able to undercut past the Ferrari and be in a position to support Hamilton. Sergio Perez - whose qualifying had been compromised by a shoulder problem - was stuck further behind the Ferrari/McLaren fight and therefore unable to be of any strategic help to Verstappen.

Even though Verstappen had been beaten in Portimão, he'd enjoyed that race because "it wasn't a race of continuously tyre-saving." But this one was. Furthermore, the thermally-induced tyre deg turned out to

be more aggressive than had been suggested on Friday - not just for Red Bull with its skinnier wing, but for everyone. Hindsight suggested that the pace Verstappen chose - and which Hamilton happily followed - in the first stint of Barcelona was too fast for a one-stop. His rear tyres began to surrender on the 23rd lap, when he dropped almost half a second from his earlier super-consistent pace. On the next lap they dropped off altogether towards the end of the lap - and he pitted, unannounced, before the tyres were quite ready.

At this point Mercedes might have been able to spring Hamilton past - as the Red Bull stop was over 4sec rather than the usual sub-2sec. But Hamilton stayed out, which

"Any other strategy was doomed: the Red Bull was just harder on tyres"



Victory in Barcelona made Hamilton the year's first back-to-back winner, and also sealed his best-ever start to a campaign

Word on the beat

Calendar chaos, secret votes and staff snatching

● The **F1 CALENDAR** remains in a state of Covid-flux. After the cancelled Canadian GP's intended stand-in of Istanbul was in turn cancelled after Turkey was put on the UK's Covid red list, there will now be two races at the Red Bull Ring (as was the case last year). With question marks around the feasibility of Mexico and Brazil there is the possibility of a second American race, at the Indianapolis road course. The scheduled races at Singapore, Japan and Australia still have varying degrees of certainty around them.

● McLaren's **ZAK BROWN** has called for secret ballots in F1 voting matters among the teams, feeling that the customer teams invariably vote with their suppliers.

● The **SPRINT RACE** qualifying format is set to be trialled at **SILVERSTONE, MONZA** and one other venue this year.

● **FLEXI-WINGS** will be further regulated by the FIA after Mercedes pointed to on-board footage of the **RED BULL WING** appearing to lower at speed. A new protocol is set to take effect from the French Grand Prix.

● **JUAN PABLO MONTOYA** will contest the Indy 500 for Arrow McLaren SP, following the Fernando Alonso path of McLaren old boys who'd left the team under controversial circumstances in the Noughties teaming up once more. Montoya will be trying for a third victory in the event to add to those of 2000 and 2015.

● Mercedes' **TOTO WOLFF** claims that the new Red Bull Powertrains concern had been offering "lottery money" to staff at Mercedes HPP after Red Bull announced the recruitment of five engineers from Mercedes' Brackley power unit manufacturer.



The grand prix in Barcelona came down to a straight contest in tyre wear between Mercedes and Red Bull. Hamilton's fresher mediums bear the scars

rather puzzled Red Bull. Until they took a look at the tyres which had just come off Verstappen's car: they were finished, with no tread left. With another 42 laps to go, it suddenly became apparent that this might turn out to be a two-stop race. With only a set of softs left if it needed to stop again, and with Merc having another set of mediums available, Red Bull was on the ropes, even though Verstappen continued to lead.

It played out the way Red Bull feared, with Merc bringing Hamilton in for those mediums from just behind Verstappen with 23 laps still to go. It was Hungary 2019 all over again as Hamilton easily recovered the deficit the pit stop had cost - and, with a lot more grip, passed Verstappen without even needing to fight it out, six laps from the end.

It had been partly a strategic race, but at the heart of that strategy was a Mercedes that was simply faster over a race stint because of the easier way it uses the tyres. Maybe Verstappen's style is harder on the tyres than Hamilton's - he has in the last few years devoted great attention to this aspect. He seemed to be intimating something about that when he said, "I learned a lot about Max today, perhaps more than all the other races

put together. This has been a good one in that sense. When you are with people on track you get to see different things and watch closely and obviously I was following relatively closely and I learned a lot about his car and how he uses it, so it was a good race in that respect."

But the primary difference is between the cars, stark enough that it can be seen in how quickly they switch the tyres on in qualifying. All the evidence suggests that Spain was just not a winnable race for Red Bull, despite Verstappen having qualified within hundredths of Hamilton's 100th career pole.

Hamilton could only have lost this race by resisting Verstappen's aggression into the first turn seconds after the start.

A collision might have made the point that Hamilton - who'd been dumped over the kerbs at Imola by Verstappen at the beginning of the race - wasn't about to be intimidated by Verstappen's take-no-prisoners approach. But it was a fight he knew he didn't need to have.

There will be plenty more fights to come across the course of this record-breaking campaign. The fascination looks set to be their different complexions from one track demand to the next. ●

"Maybe Verstappen's style is just harder on tyres than Hamilton's"

HIGH-VELOCITY FORMULA ONE STORIES ABOUT TWO RACING ICONS

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Tried and tested on tyres

Could Red Bull have countered Mercedes' Spanish strategy?

EVERY TEAM WENT INTO THE Spanish Grand Prix pretty certain it was going to be a one-stop race. It wasn't. The tyre degradation and wear was more aggressive than had seemed the case during Friday practice and it migrated the race to a two-stop – and that certainly only enhanced Mercedes' prospects. Lewis Hamilton's victory over Red Bull's Max Verstappen drew obvious comparisons with the near-identical pattern seen in the 2019 Hungarian Grand Prix, with Hamilton pitting from close behind the leader, emerging over 20sec behind but his fresher tyres enabling him to catch and pass Verstappen with a few laps to go. You typically need an advantage of at least 1.2sec per lap to be able to overtake around this track. Hamilton on tyres 18 laps newer than Verstappen's was lapping around 1.5sec faster by the time he caught him and passed.

Could Red Bull have done anything different? If it brought

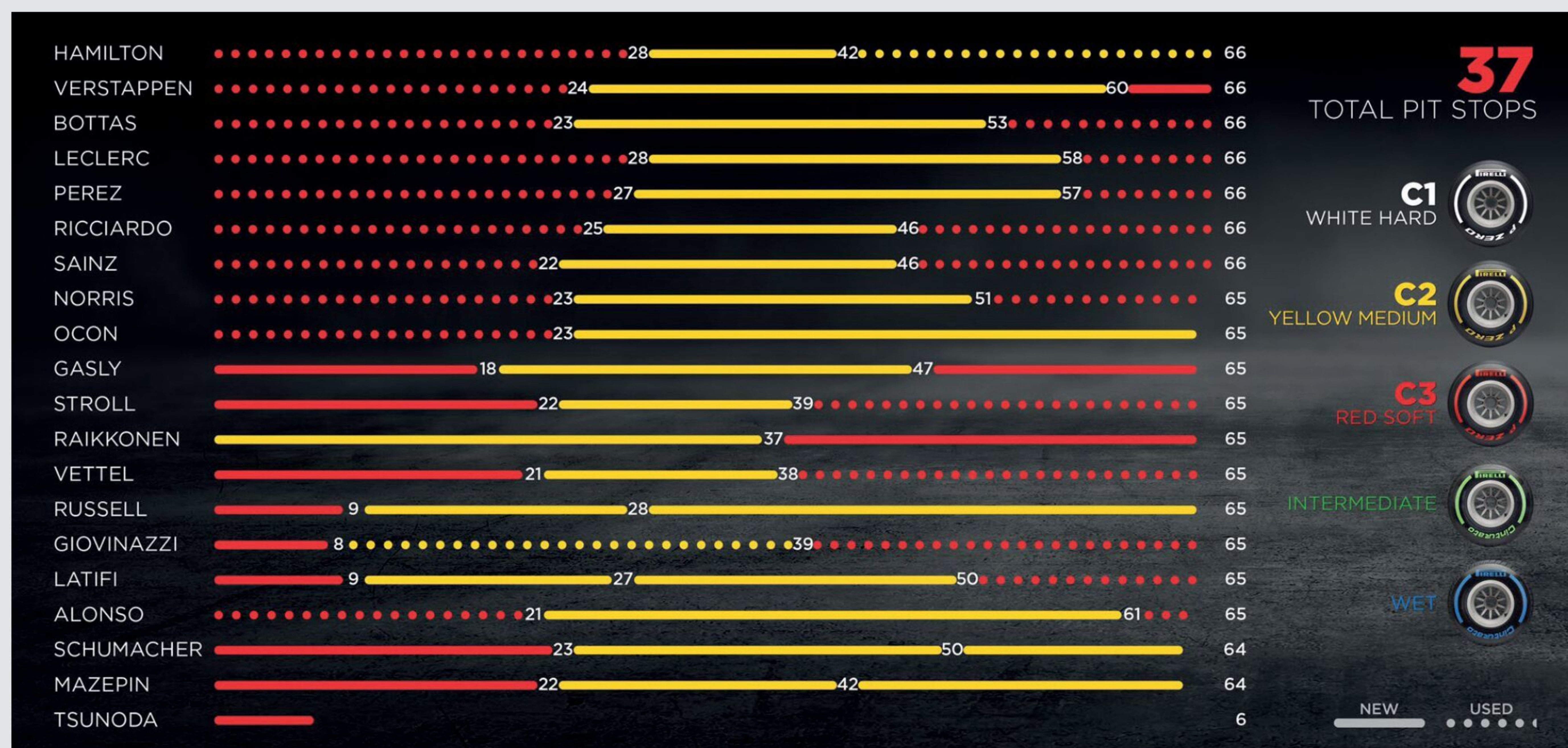
Verstappen in for a second stop immediately after Hamilton, he would have rejoined around 2sec behind. He would have been on fresh soft tyres (because that's all the team had left) to the fresh mediums of Hamilton. The softs were only around 0.7sec faster initially. So pitting in response to Hamilton would definitely have lost Verstappen track position and made it unlikely he'd be able to pass. Staying out offered the possibility that Hamilton would not make up the 21sec pit stop loss in the remaining 24 laps and that Verstappen could defend in the late stages. So by the time Mercedes made the second stop Red Bull was faced with a choice between certain loss of position (by pitting) or likely loss of position (by staying out).

The third option was to have anticipated Hamilton's second stop by bringing Verstappen in before. In which case Mercedes would logically have left Hamilton out, leading the race. It would then

have been Verstappen's task to make up the pit stop time loss – but on softs, not the more durable mediums that Hamilton enjoyed. The initial 0.7sec advantage of the softs would quickly fade and be reversed. The performance of the mediums was degrading at the rate of around 0.05sec/lap. Those of the softs was around 0.1sec/lap initially but rising to more like 0.15sec/lap after three laps. Which over the remaining 24 laps would work out as Hamilton's mediums being around 9sec faster over the stint than the softs Verstappen would have been obliged to use. Could he have caught Hamilton and still had the grip to pass? These numbers tend to back up the belief that he couldn't. They suggest he'd have caught Hamilton initially at the rate of 1.2sec per lap but that rate would quickly fall until by the time he arrived on Hamilton's tail he'd have not been able to lap any quicker and would subsequently actually be slower.

So why did Red Bull not have an extra set of mediums? It had based its practice and qualifying around a one-stop, which this race traditionally is. It was a two-stop last year but that was held in the sweltering heat of August. In May, one-stop seemed almost certain. Mercedes believed so too, but not with as much certainty. It recalled that some had struggled to make a one-stop work back in 2019 and so gave itself the insurance policy of an extra set of mediums.

But at the root of Merc's advantage was a car that did not degrade its tyres as quickly as the Red Bull around a circuit which induces serious heat degradation. It's believed the high-rake Red Bull's more aggressive front end tends to impose more sudden loads on the rear tyres, something its shorter wheelbase will also contribute to.



THINKING AHEAD: Mercedes' reserve of an extra set of medium tyres allowed Hamilton the flexibility to make a two-stop race work



JOHNNY HERBERT

"It's good to see a couple of British drivers coming through, and they're class acts"

THE PAST MONTH HAS BEEN ONE of contrast for Britain's up and coming Formula 1 stars Lando Norris and George Russell. While one has shone for McLaren, the other endured an accident at Imola with Valtteri Bottas, the man George might one day replace, that triggered a moment of conflict and a delicate political situation with Mercedes-AMG chief Toto Wolff.

The accident itself was rightly judged as a racing accident. If I put myself in George's shoes, yes, he got the run towards Tamburello and felt he could do it on the outside, even if it's always going to be difficult there. It's not the braking and the first left that's the problem, it's what we saw with Max and Lewis on the first lap - the right-hander in the chicane, which closes off and disappears. Was it really on? When George pulled out to the right where there's that slight kink, Valtteri very slightly looked like he would wander out to the racing line - and that's what George saw, the gap closing. It's almost like he shifted his hips and torso over in the monocoque thinking 'it's getting close' and in that moment put wheels on the grass. But from the onboard camera you can see Valtteri did steer left. The racing line was never taken away from George, he just got squeezed. Hence, a racing incident.

Can you blame George for going for it? No. But the subsequent outburst showed his youth. I've got to know him over the past few years,

and there is a feistiness to him. He's very confident and has a lot of self-belief. But you have to be very careful how you deal with such a situation because the media will be straight on it, and it pulls in both teams. That reaction, when George went over to Valtteri's car and slapped him lightly, then what was said afterwards, didn't go down very well with Toto. Sometimes you have to bite your lip, then wander down to Mercedes later for a word in his ear. That's when you do it, not in front of the world. It only harms your situation, especially as it was a genuine racing incident. Blame games are very dangerous things.

We all get that George is trying to make an impression, especially in those circumstances against that specific driver. But once the dust

settled it didn't turn out to be a positive one for George and was damaging for him. But he'll learn from that and it's not actually a bad thing for him to go through. Also it might not be all negative. That incident will only make people think when they are in a racing situation with him, so actually you can come out of something like that in a stronger

position because people are wary of you. Like the Lewis and Max move earlier in the race, it's all about intimidation. Martin Brundle used to mention sometimes that when you saw Ayrton Senna's yellow helmet in your mirrors it was intimidating. I didn't think that way, but Lewis and Max do have that in their armouries - and it can be a powerful thing to have.

"Russell could come out of his Imola crash in a stronger position"

In contrast, Lando's month has been brilliant. I've been very impressed with him following his strong fourth place in Bahrain, the podium at Imola and fifth in Portugal. One thing is the consistency, but he's also shown good race craft and don't forget he's up against Daniel Ricciardo in the other McLaren. I know Daniel has said 'I'm still settling in', but he's the one with the wealth of experience. Spain was the first time Daniel has had a better race weekend so far and he was always bound to come back at Lando. But the young whipper-snapper is doing himself a lot of favours against someone like that. Equally, Carlos Sainz has done a bloody good job at Ferrari so far and as a former team-mate that's only good for Lando too because they were nip and tuck at McLaren.

Lando's confidence is growing and we can see that, not so much in his body language but out on track. It's really nice to see.

It is good to see a couple of Brits coming through, and they both happen to be class acts. If you put either in the right equipment they could deal with it and they are interesting because they are such different characters, too. George is very professional and confident, as is Lando - but he's more laid back and very funny. So they are a different cup of tea to each other, and yet on track their skills are very similar, even if they go about the job differently. They've both got great futures ahead. ●

Johnny Herbert was a Formula 1 driver from 1989-2000 and a Le Mans winner in 1991. He is a regular contributor to Sky Sports F1. Follow Johnny on Twitter @johnnyherbertf1

MAKING THE CUT

One small floor change is making a big impact for many of the 2021 grid. On the left we show McLaren's original design for the MCL35, and on the right we reveal how the addition of the Z-floor alters its aerodynamic performance

LAUNCH SPEC
(OLD)

BARCELONA
(NEW)

FRONT
TYRE
WAKE

FRONT
TYRE
WAKE

FORWARD HALF OF FLOOR CREATING OUTWASH

Creating downforce and pushing turbulent front tyre wake away from the car

Z-FLOOR INTERSECTION

A distinct step is formed between the outwash and inwash section of the floor, creating an almost parallel edge to the rear half of the floor. The total floor area is reduced, although the overall effect is beneficial

REAR HALF OF CAR CREATING INWASH

Creating a vortex that is pulled under the car that follows the tapered edge of the floor. This gives an airflow that helps keep the rear tyre wake away from the diffuser

REAR HALF OF CAR CREATING INWASH

This vortex now follows the near parallel floor edge. This is directed more accurately between the rear tyre and diffuser

2020 FLOOR EDGE

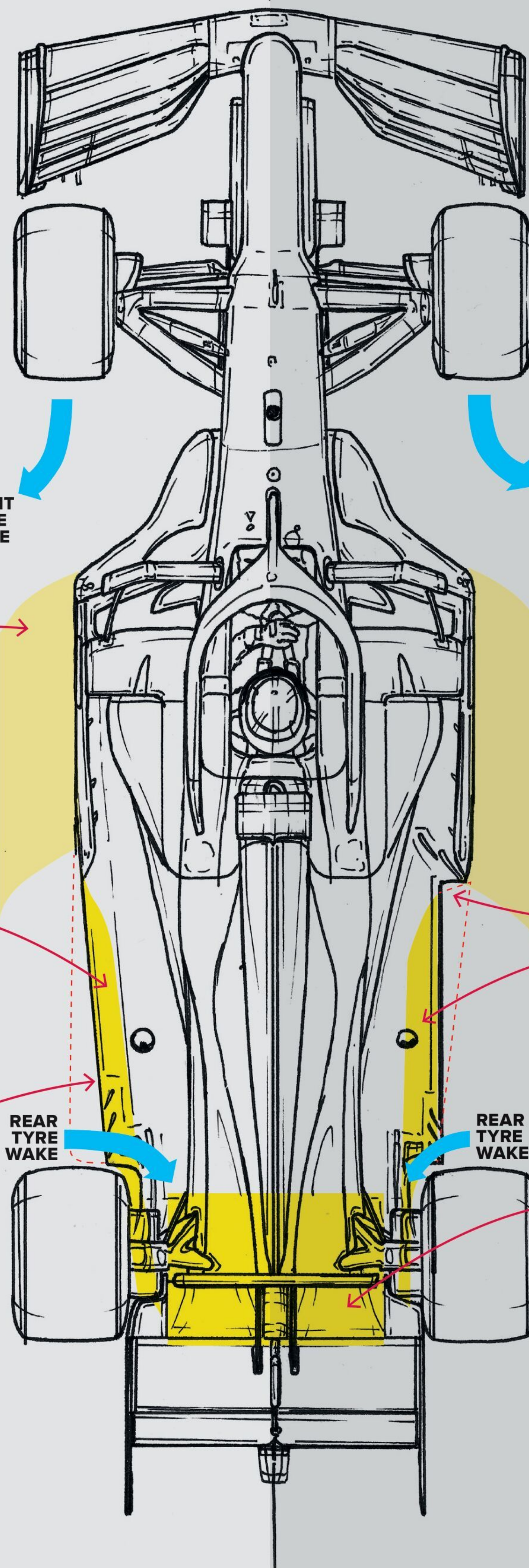
For 2021 the floor edge must not extend past this tapered edge

REAR
TYRE
WAKE

REAR
TYRE
WAKE

DIFFUSER RUNS IN CLEANER AIR

Without the wake spilling off the inside of the rear tyre and entering the diffuser, the diffuser works more efficiently



McLaren's Z-floor

It may look like the work of Zorro, but there's some clever thinking behind this tweak, says **Mark Hughes**

MCLAREN HAD A SIGNIFICANT upgrade fitted to its car in Barcelona, featuring a new floor and subtly different front wing. The outer end of the wing's mainplane has been raised slightly, giving a greater 'throat' area beneath, while the gap between the mainplane and the first flap has been widened. Both these changes suggest McLaren is seeking to make the car less pitch-sensitive. With the previous smaller throat area, the gap between the wing's underside and the ground at that outboard end would be very small as the car dives under braking, enough to generate significant ground effect. As the surface gets closer to the ground the downforce increases exponentially. If this ramp-up on downforce is too sudden it can make the car nervous and induce rear instability.

This is generally a more likely problem to encounter with the 2021 generation of cars because of the reduced rear downforce from the trimmed floor and other aero restrictions at the rear around the diffuser and brake ducts. One of the rebalancing processes that teams are going through is to make the front downforce less aggressive as the car dives, simply because the rear can no longer withstand such sudden increases in load.

Ideally, they would wish to retain the extra front downforce by boosting that at the rear - but this is a long process. McLaren's new floor is part of that process. This means the team has joined the 'Z-floor' club, popularised by Mercedes and Aston Martin with the 2021

cars. With McLaren now adopting it, only Alfa-Romeo and Haas remain with what was the conventional diagonal floor edge.

For '21 the regulations trimmed some area from the floor in order to reduce downforce. A notional diagonal line was drawn between two points at the front and rear of the floor. There was also a ban on the slots and holes on the floor which had proliferated over the years.

The Z-floor seeks to compensate for both those restrictions. What those slots used to do was create vortices on the outer edges of the underside of the floor which would seal the whole floor area and maximise the generation of negative pressure there. The Z-shaped cut-out, with the vane above it to trip the air into a vortex which is then sucked beneath the floor, is a way of recreating that sealing effect.

There is also a secondary benefit. The cut-out allows a section of the floor edge to be straight rather than diagonal, giving a better,

more consistent airflow acting upon the floor. The amount of negative pressure created by the underfloor will be a multiple of the surface area of that floor and the pressure per unit of area. Cutting a chunk from the floor to create the 'Z' necessarily reduces the floor's surface area to less than is permitted by the regulations.

But the loss of that small section of surface area will be more than overcome by the efficiency gains made by inducing the vortices, which will increase the negative pressure of the whole floor. The more negative pressure, the more the car is being sucked into the ground. Generating downforce in this way is far more aerodynamically efficient

than from upper body surfaces such as wings because the drag penalty is vastly smaller.

It is perhaps significant that the Mercedes and Aston Martin - the only two low-rake cars in the field - were the first to come up with the innovation. The low-rake cars clearly lost more performance from the regulation changes than the high-rake. Comparison from qualifying in the first four races of the season shows that Mercedes is 1.5% slower than last year, Aston Martin 2.1% slower. The high-rake cars are slower by between 0.4-1.2%. The reduced winglet size of the rear brake ducts combined with the halving of the length of the outer diffuser strakes has made it more difficult to join the airflow of those two components up, something which poses more of a problem on the low-rake cars. Joining that airflow up helps keep it from being sucked beneath the floor around the diffuser, damaging the downforce, but on a low-rake car the diffuser is physically further away from the brake ducts. On a high-rake car, the floor rises up to meet the ducts more closely.

Hence there was a more obvious and urgent need on the low-rake cars to augment the power of the floor vortices - because these helped keep that flow around the rear wheels from being sucked into the underfloor near the diffuser. But once the floors made their first appearance in testing - and Mercedes deliberately hid the floor edges when it launched the W12 - so the teams with the high-rake cars will have understood what the Z-section was for. By the first race several of the high-rake cars also had Z-floors. McLaren is among the last onto this bandwagon, but its car has been making good progress regardless, giving hope that there is yet more to come. **●**



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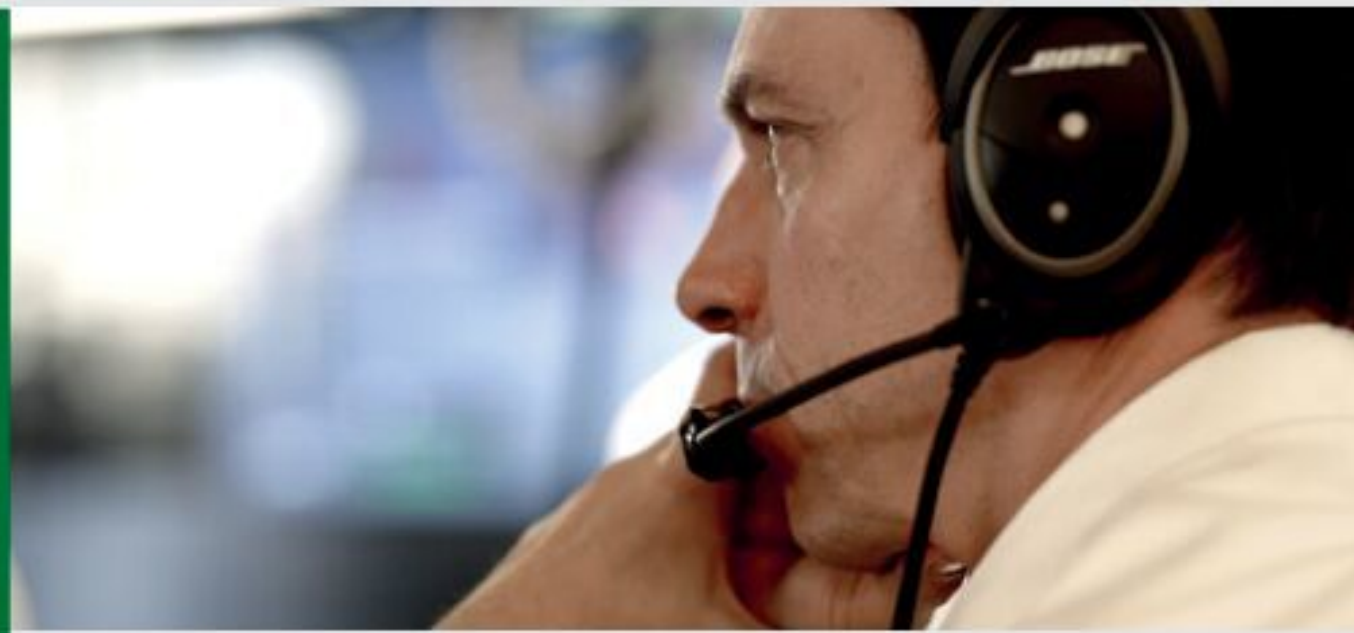


silverstone.co.uk/hospitality/treatDad

MATCH
HOSPITALITY

Good month, bad month

James Elson charts the ups and downs of the F1 circus



▲ TEAM TO FIA RADIO

Broadcasting Toto Wolff complaining to F1 race director Michael Masi about the 'Bolshoi on wheels' (see 'Mazepin') was a piece of TV genius. Soon we might get even more interesting interactions like Ferrari asking: "Can we turn our engine back up now?" or Christian Horner accidentally mouthing off about Crofty's commentary.



▲ REJUVENATED 'HONEY BADGER'

Daniel Ricciardo's comeback drive in Portugal might not have been quite 'Wattie' at Detroit '82, but he still put on a show coming through from 16th to ninth. His Pirelli Preservation Prowess (™) was on show both there and Spain, where he finished sixth. Monaco next, a Honey Badger speciality.

▲ MIXED STRATEGY RACES

What contributed so beautifully to an astoundingly not boring Spanish GP was a mix of strategies – to two-stop or not to two-stop, that was the question. Barcelona is a track which is trickier to pass on than the last Mini Roll in the packet – meaning the Brackley boys had to think out of the pit box to beat Verstappen. A second stop gave Hamilton the pace advantage he needed to close a 26sec gap in 16 laps. Virtuoso stuff – going all out for the win... In F1? Who woulda thought it?



▲ FERRARI'S NEW DREAM TEAM

Leclerc and Sainz, above – shades of Villeneuve and Scheckter? Some might disagree, but it looks like it could be a long-term partnership – if the Maranello team can fix the car...

▲ MICK SCHUMACHER

Normally taking a season to play himself in before getting up to speed, the new 'MSC' has hit the ground running in F1. Leaving his team-mate floundering behind and also at times challenging cars ahead in the rather unweildy Haas has been mightily impressive.



▼ NIKITA "I SPIN THEREFORE I AM" MAZEPIN

'Mazepin' continued his 'Bolshoi-on-wheels' tribute in Portugal and Spain as he twirled his way through the Mediterranean. If Daddy Dmitri does have so many roubles lying around, though, maybe he should invest in some stabilisers for the not-so-racy Russian? Mazepin also did a good job of getting in other cars' way in both races, too. Some more great compliments for the Mazepin scrapbook: "This guy will never learn," said Charles Leclerc after being blocked during practice – probably one of the nicer things we'll hear this year.



▼ JIM RATCLIFFE'S FACE MASK

Nothing says 'F1 isn't elitist' like a billionaire businessman, who owns part of arguably F1's best team, marching round the paddock – like he owns the rest of that as well – wearing his face mask wrongly. Wouldn't be as bad had he not become even more of a billionaire by supplying sanitisation products to the world. Nice.

▼ DOWNHILL SLOPE

It all looked so promising for Alpine after Barcelona qualifying. An impressive fifth for Esteban Ocon, a slightly less impressive 10th for Fernando Alonso. Unfortunately, the former would fade to ninth in the race while the latter dropped like an indignant Oviedan pebble to 17th. It's back to the easel for the Viry et Enstone boys.

▼ BARCELONA'S FINAL CHICANE

If racing at Imola taught us anything, it's that removing the final chicane from your not-laden-with-overtaking-opportunities track is a good thing. Drivers could line up for a dive into Turn 1, rather than gasping for grip in the dirty air as they lose ground in that migraine-inducing final left-right.



▼ SNARKY TSUNODA

It's all going a bit south for F1's sweariest pocket rocket. Also didn't cover himself in glory by slating his team in Spain. Think about the honour, Yuki...



F1 RETRO

Unser and Andretti's round the world weekend

Extraordinary tales from the *Motor Sport* digital archive

WHO ON EARTH DOES A SPOT of F1 qualifying at Monza on a Friday, flies back to the States for a quick dirt race on the Saturday, before heading back to Italy for a full grand prix at the 'Cathedral of Speed' on Sunday? Mario Andretti and Bobby Unser, that's who.

IndyCar legend Unser (*top*) sadly died on May 2, but his ability to tell a good yarn stayed with him throughout his life, as evidenced in our rip-roaring Mark Hughes archive piece from 2000. September 6-8, 1968 might not have been quite the average weekend, but it wasn't far off.

The US duo had decided they wanted to make their F1 debuts at that weekend's Italian GP, but also had binding contracts to run in the Hoosier 100 in Indiana on the Saturday.

In addition to clocking up flying thousands of air miles over 72 hours, it also involved them driving *Rush Hour*-style through Italy and being threatened at gun point by soldiers before getting caught in the political maelstrom that was F1 in that era. And then, after all of that, being told they couldn't even race...

"You've no idea what we went through to get to that race on time," said Unser, still sounding like he hadn't quite got over the events of that weekend. As the cliché goes, sometimes it's just about the journey...

To read the full story visit motorsportmagazine.com/archive

Inheriting the mantle

BMW's sporting Ti label has a fine heritage and the latest model to carry it deserves the badge, says **Andrew Frankel**

WHEN I WAS A CHILD, I lived in an almost entirely Alfa-centric world. There were Giulias, Berlinas, Alfettas, 'Suds, one after the other from the late 1960s to the mid-1980s when I left home. There were but few exceptions to this rule - I remember an Escort GT, a Fiat 132 and even a Triumph 2500PI - but these flirtations never lasted. Except one.

It was an orange BMW 2002Tii which turned up during a betwixt-Alfetta interlude. My father was a bit shocked by how good it was: faster than the Alfas and more fun too even if it didn't quite have the charm. Indeed he was so impressed with it he did the logical thing and chopped it in for a 2002 Turbo. Logical, but wrong. The Turbo was terrible: the first time we met it broke down before reaching the exit of the car park. And that was that: it was back to the slower but always dependable Alfas.

I mention this now because 50 years after

the launch of the Tii, BMW is giving its Ti brand one of its far too occasional outings. Indeed, in that half century interlude there have been just two other Tis, both Compact models.

So what is a Ti, and does BMW need it given it already has its 'M' high performance brand and its rather tepid 'M Performance' sidekick? A Ti is, or at least should be something subtly but significantly different. A Ti need not - almost should not - have huge power. It should always be one of the more affordable fast BMWs and interested not in projecting visually aggressive statements or devastating lap times, but the purer business of providing simple driving pleasure. That's what all the previous Tis did. And I'm delighted to say this one does too.

That said, BMW has done plenty to give this car less of a chance of making its mark in a class already bursting with talented performers. Once you'd expect any BMW in this role to stand out simply for rear-wheel drive and a manual gearbox. More recently fast BMW hatches have also had six-cylinder motors. This new 128Ti?



Exterior changes from the baseline 1-series are minimal; the big differences are beneath the skin

None of the above. It's conventional auto only, a four cylinder 2-litre motor like pretty much everything in the class and front-wheel drive only, the first fast BMW to be so equipped and, you might fairly think, disadvantaged.

Even so, there more going on here than BMW just turning up the power and adding some garish decals to a visually pumped but otherwise fairly standard 1-series hatch. First, it's based on the range-topping M135i, but with 261bhp rather than 302bhp from the same engine, a fair drop in power but it comes with a drop in weight too - some 80kg - courtesy of ditching its sister's all-wheel hardware. So read little into the fact it takes just over 6sec to reach 62mph rather than fewer than five like the M135i: at least half that difference and probably more is accounted for by traction alone.

What I admire most however is that BMW has not just left it at that. The 128Ti comes with its own suspension settings and geometry, a revised Torsen front differential, slightly slower steering and even structural changes to offset the car's change in weight distribution. It has worked hard to give the car its own character.

Yet this is not a car to make you gasp at its capabilities like a Honda Civic Type R or Ford Focus ST. It is slower and less fun than either



Traditional circular dials are more appealing than on some costlier BMWs



“The 128Ti is pleasantly quick, has real poise and lets you know where it’s heading. It’s enough for most”

of the two cars generally held to top the class. The slight sluggishness of the gearbox is a mild annoyance in such circumstances and the engine no better than easy on the ears. This, then, is a car with other things on its mind.

Its pitch is to accept that one or two others may be rather more dynamic but that for most drivers almost all of the time, the 128Ti is at least good enough. And it is: it’s pleasantly quick, has real poise, reacts well to requests for direction changes issued by hand and foot alike and always lets you know where it is and where it’s heading. Which is enough for most.

Where it does better than any Ford or Honda is in other areas. It rides far better than either and it’s impressively quiet. Its interior is laughably light-years ahead. Indeed I prefer it to those of many far more expensive BMWs because it retains circular dials. I had a Focus ST for a while recently and can confirm the 128Ti drinks about 20 per cent less fuel too.

BMW 128Ti



- **Price** £31,875
- **Engine** 2 litres, 4 cylinders, turbocharged
- **Power** 261bhp
- **Weight** 1435kg ● **Torque** 295lb ft
- **Power to weight** 181bhp per tonne
- **Transmission** Eight-speed automatic, front-wheel drive
- **0-62mph** 6.1sec ● **Top speed** 155mph
- **Economy** 40.9mpg ● **CO₂** 157g/km
- **Verdict** Lighter, simpler: a worthy Ti

Most surprising of all is the value of the package. It’s actually around £500 cheaper than the Ford yet comes equipped with all the usual refinements you’d expect from such a car.

But surely it is the Volkswagen Golf GTI that’s the rival upon which the 128Ti has trained its guns most keenly? In the past I’d have said absolutely. But the car that for years has been the world’s greatest hatchback finds itself in a strange place at the moment. The fact that the Golf is both less powerful and more expensive than the BMW might not be deal breaker. But by trying to become more sporting it has also found itself in a no-man’s land between where it was and where its best rivals are. This makes forming a case for it very difficult.

No such problems exist for the 128Ti: in fact the Golf’s change of approach could not have been better timed, for it is into that space as the most usable of all hot hatchbacks, if not quite the most fun, that it now neatly slips. ●

Get into the groove

And you thought dancing bears had been outlawed in the UK...

ONE OF THE EVENTS I SO WISH I'd been able to attend was the launch of the Bentley Turbo R in 1986. Not for its sheer power, or sumptuous luxury, but the fact that someone thought it a good idea to present the car to the world's media at the Hungaroring, then as now one of tightest, least luxobarge-friendly permanent racing facilities ever created. The tyre bill alone must have near enough bankrupted the company.

But what's this? Another implausibly powerful Bentley grand tourer being launched on another F1 circuit? Well, think of it as an *amuse-bouche* - the proper introduction of this most powerful of current Bentleys will come in the autumn, but I was still intrigued to see how a 2273kg coupé would handle laps of the full Silverstone GP circuit.

The Speed is essentially a Continental GT with 650bhp, rear-wheel steering, an electronic differential and optional carbon



Fast and fun, the 208mph GT Speed was a Silverstone success – and there's more to come from Bentley

ceramic brakes. The result is a kind of dancing bear where what impresses is not so much the quality of the dance, but the fact it's doing it at all. The Speed is fast, composed and even fun in a kind of way. It's no track car, but nor did it throw its hands up in horror as much as those Turbo Rs must have done 35 years ago.

A full assessment of the Speed as a long-distance touring car will come later. But for now, it went better than I'd expected. **AF**

BENTLEY CONTINENTAL GT SPEED

- **Price** £175,000 (approx)
- **Engine** 6 litres, 12 cylinders, turbocharged, petrol ● **Power** 650bhp
- **Weight** 2273kg
- **Power to weight** 286bhp per tonne
- **Transmission** Eight speed automatic, four-wheel drive
- **0-60mph** 3.6sec ● **Top speed** 208mph
- **Economy** n/a ● **CO₂** n/a
- **Verdict** Nothing grizzly about this.

Practical, but is it needed?

Heavyweight Taycan expands and gives dizzying acceleration



REMEMBER THE MERCEDES-BENZ CLS Shooting Brake? A brilliant idea, combining the style of the CLS coupé with the practicality of a conventional estate. Brilliant, that is, in all regards but one: it didn't sell.

So what hope then for this Taycan Shooting Brake - I'm sorry, Cross Turismo? Like the CLS it sits on the same wheelbase as the car from which it's derived, has no more legroom in the back, but comes instead with a higher roofline and big boot grafted on behind the rear wheels. It is, of course, even heavier than the already startlingly heavy standard Taycan.

For myself, however, I wish it well. The Taycan was already the world's best electric car and the Cross Turismo body adds a load more practicality for an additional 25kg of weight, an increase of barely more than 1%.

Of course the Turbo S version I drove is hideously expensive at a shade under £140,000 and not just faster than anyone

needs to go, but also faster than anyone would want to go. One full bore acceleration run was more than enough to make me feel sick and dizzy. But the entry level 4S model with a few choice options and still delivered for a five-figure sum? Now you're talking. Swift, svelte, comfortable and very smart; if I could have any machine not powered by fossil fuels it would be that, standard Taycan included. **AF**

PORSCHE TAYCAN CROSS TURISMO TURBO S

- **Price** £139,910 ● **Engine** Front and rear electric motors, 94.3kWh battery
- **Power** 751bhp ● **Torque** 774lb ft
- **Weight** 2320kg
- **Power to weight** 324bhp per tonne
- **Transmission** Two speed, four-wheel drive
- **0-60mph** 2.7sec ● **Top speed** 155mph
- **Range** 241-260 miles ● **CO₂** n/a
- **Verdict** Functional and very fast.

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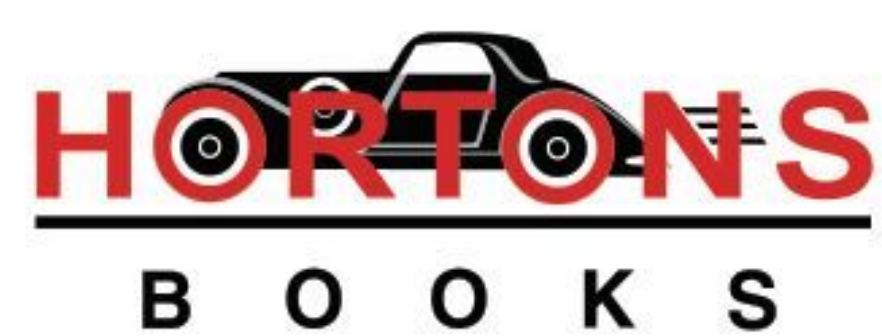
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War, what is it good for?

A new book on the battle between CART and IRL is dramatic, comical and, says **Simon Arron**, surprisingly entertaining

FOR CONTEXTUAL REASONS, a little background is perhaps required before we examine the latest book from one of America's foremost motor racing analysts, and occasional *Motor Sport* contributor John Oreovicz.

I must admit to having almost zero interest in politics. In the UK, this is partly because Westminster seems to have become a toxic playground for the terminally incapable - but even before then I found it hard to get excited about some of those involved. And it's the same when power struggles break out in the parochial business of motor racing. At the heart of the FISA/FOCA conflict in the early 1980s, I'd read a couple of paragraphs in the specialist weeklies to see who was patronising whom, and why, then despair: "Please stop bickering; just get on with the bloody racing..."

In which light, a 432-page book about schisms within the American single-seater

mainstream should have been reviewed by almost anybody else. And yet...

It helps that Oreovicz is a very fine writer, of course, but this is by no means as dry as its central motif might suggest.

It is 25 years since CART (Championship Auto Racing Teams) and the newly formed Indy Racing League went head to head and carved American single-seater racing in two. That peaked on May 26, 1996, when CART ran its US 500 at Michigan on the same day that the IRL staged its annual 500-mile showpiece at Indianapolis. CART appeared to hold most of the aces - Penske and Newman/Haas foremost among the teams, Paul Tracy, Al Unser Jr, Michael Andretti, Bobby Rahal and a couple of Fittipaldis within the cast of drivers. Indy had a few ex-F1 veterans, not least Michele Alboreto and Eddie Cheever, but those such as Racine Gardner, Tyce Carlson and Billy Boat weren't ever likely to become household names. Viewed from afar - specifically on cable TV at a brasserie in Pau, where a section of the European racing community had gathered for the annual street race - it appeared to be a masterclass in self-destruction.

It would be a few years before any CART team bought the required kit (the series ran to different regulations) to return to Indy. Ganassi broke the mould in 2000, winning the race with Juan Pablo Montoya, and a trickle eventually became a stampede. Oreovicz: "Montoya, who had never been around the Brickyard in a racing car, raised a few eyebrows with his apparent indifference toward the historic venue after hitting 217mph on his fourth flying lap during an April test. 'When I thought of racing in the United States, I thought of CART - not the Indianapolis 500,'



In 2000, Ganassi became the first CART team to race in the Indy 500 since 1995; Juan Pablo Montoya is suitably relaxed

he commented. 'So far, it's been very simple to get around here'..."

Very Montoya, that...

It would be 2008, however, before the CART series was finally extinguished and American single-seater racing had a reunited focal point, by which stage NASCAR had moved well ahead in the ratings.

But this is not simply a book about that split and its consequences. It covers pretty much the whole history of Indycar racing, not in terms of detailed race reports but with a stroll through the events, plots and subplots that have shaped it.

The background detail fluctuates between the dramatic - a fatal gunfight involving IMS official and former racer Elmer George, his estranged wife and her new boyfriend, for instance - to the mildly comical. In 1979, when CART was formed and American single-seater racing had previously divided itself in two (albeit relatively briefly), teams committed to the new series had to use pick-ups to tow their



Tony George, founder of the Indy Racing League and a chief protagonist in the split



“This is by no means as dry as its central motif might suggest”

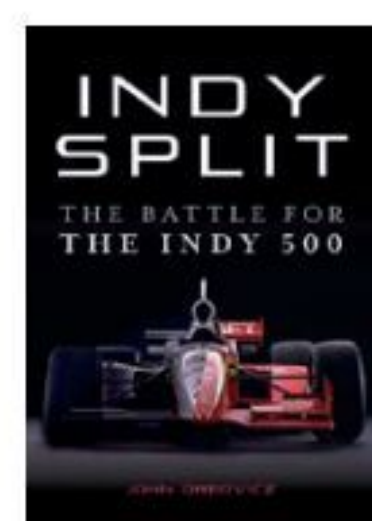
cars the final few miles to a pre-season test at Phoenix, because floods had washed away most of the main road and regular transporters couldn't get through.

There's a bit about why promising young racer Jeff Gordon ended up racing stock cars, despite initially harbouring Indy dreams. Linda Conti, whose team gave Gordon a Super Vee test, recalled visiting the CART paddock to discuss opportunities. "AJ Foyt was the only one that spent any amount of time talking with him, and I don't think Carl Haas even said hello. Jeff was pretty dejected on the ride home. He thought teams might actually want to hire him because he had talent, but Foyt told him, 'Get the hell away from these assholes and go NASCAR racing. They actually want a

driver, not a cheque.' I never heard Jeff mention the Indy 500 after that."

There's also a nice line about one of the reasons CART superstar Rick Mears opted to remain in America, rather than pursuing any F1 aspirations in the slipstream of a successful test with Brabham: "Knowing there was a 7-Eleven on every corner."

This is a political story with strong human content, an erudite illustration of how sport shouldn't be run and a cracking good read. **○**



Indy Split
John Oreovicz
Octane Press, \$27
ISBN 9781642340563

STEPHEN SOUTH: THE WAY IT WAS

Darren Banks

Warmly received when first published, it swiftly sold out. One of Britain's most promising young racers of the 1970s, South lost a plum seat with the Toleman F2 team in 1980 after testing an F1 McLaren without telling his employer. He subsequently picked up a Can-Am deal, but his career ended that summer when he suffered devastating leg injuries in a practice accident at Trois-Rivières. This honest, compelling account of a career cut short has now been reprinted. **SA**
Performance Publishing, £25
ISBN 9780957645028

MUD OR BUST: THE BIRTH OF RALLYCROSS

Jeremy Walton and Peter Osborne

Four-wheel-drive Capris, mud-caked Minis and a Cosworth-powered DAF: this fond look back at the early days of rallycross is nothing if not eclectic. It is proudly personal, rather than wearing 'official history' pretensions and all the stronger for it. Compiled from black and white photos from 1969-71 discovered in a dusty garage matched with reports from *Motoring News*, what the book lacks in gloss it makes up for in vim. A contents list would have been nice but this is an unashamedly agricultural romp through a period of what it calls 'motorised madness'. **JD**
fromthedrivingseat.com, £9.99

MAKING A MARQUE

Peter Moss and Richard Roberts

An impressive assemblage of Rolls-Royce advertising from the earliest text-only fliers for the 1904 10HP to romantic images for the 1939 Wraith, comparing approaches in Britain – tradition and privilege – and the US – achievement and success. Claude Johnson's PR genius is clear, soon cementing RR as "the best", backed by aristocratic endorsements. Extracts of company minutes show RR spent £15,000 on publicity in 1932 alone in multiple arenas (not *Motor Sport!*). A suitably high-quality production offering hours of browsing. **GC**
Dalton Watson, £95
ISBN 9781854433107

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To mirror the teardrop lines of the Speedtail, a new movement, the CRMT4, was developed

Ahead of the curve

Richard Mille's alliance with McLaren has given horologists a new level of ingenuity. Now there's the Speedtail-derived RM40-01

THE LONG-STANDING CONNECTION between cars and timepieces has produced endless watches with cues from the automobile world. You know the sort of things: wheel-shaped winding rotors, sub-dials that look like brake discs, markings based on speedometers and so on.

But the perfectionists at McLaren wanted a more technical, less clichéd approach when they set out to find a watch partner - which is why the marque announced in 2016 that it had made the decision to go with Richard Mille, known for its 'racing machines for the wrist'.

The first watch to emerge from the pairing was the RM50-03, the world's lightest split-seconds tourbillon, followed by the RM11-03 fly-back chronograph to honour the Senna.

Just months after the launch of the Senna, McLaren announced its intention to create the first hyper-GT in the form of the Speedtail - the spiritual successor to the F1. Even before the plan was made public, Richard Mille and McLaren had started on a project to create a suitably extreme watch to complement it.

And here it is: the RM40-01 self-winding tourbillon, a piece of micro-engineering that has been developed around the three-seater Speedtail's distinctive 'teardrop' silhouette.

It's said to have taken Richard Mille's casing department 18 months to perfect the design,

which both mimics the form of a water droplet and alludes to the car's aerodynamic features - the bezel indentations evoke the bonnet openings and the push-pieces recall the air outlets behind the front wheels.

Five prototypes were required to perfect the case, mainly because it's significantly wider at 12 o'clock than at six and has a taper between the titanium bezel and the back, the two being held with unequal length titanium pillars to form a 'sandwich' with the Carbon TPT band.

The unique design inevitably demanded a unique movement, and the RM40-01's CRMT4 'engine' took a claimed 8600 hours to develop. Comprising 603 components, it is made largely from titanium with a platinum and red gold winding rotor inspired by the car's bonnet and the barrel-setting by its roof line.

The mechanism's curve is based on the brushed metal divider between the car's cockpit and its bodywork, and the orange line running from the lower part of the movement and on to the strap recalls the vertical spotlight mounted in the Speedtail's rear screen.

And, speaking of glass, the sapphire crystal that protects the watch is tapered to 1/200th of a millimetre - yet is water resistant to 50m.

Limited to 103 examples. And you thought McLaren's engineering was impressive...

Richard Mille RM40-01 Automatic Tourbillon McLaren Speedtail. £850,000. richardmille.com



UK-BASED MARLOE HAS PRODUCED two limited editions to mark this year's centenary of the birth of Donald Campbell. The 403-piece Eyre model, *above*, recalls Donald's 403mph run on the dry bed of Australia's Lake Eyre in Bluebird CN7 in 1964 and includes colouring from its fuel pressure gauge and a seconds hand based on instrument needles. The 300-piece Bonneville harks back to his father Sir Malcolm breaking 300mph at the salt flats in 1935. Both use Miyota hand-wound movements.

Marloe Campbell editions, £329 each. marloewatchcompany.com



THIS LATEST WATCH TO EMERGE from the 19-year partnership between Breitling and Bentley has a vintage aesthetic based on the maker's chronographs of the 1940s - inspired by the fact that former company head Willy Breitling was a Bentley driver. The 42mm red-gold case has a transparent back and houses a racing green dial with an aperture for the tourbillon. Limited to 25 examples.

Breitling Premier B21 Chronograph Tourbillon Bentley Edition, £39,900. breitling.com

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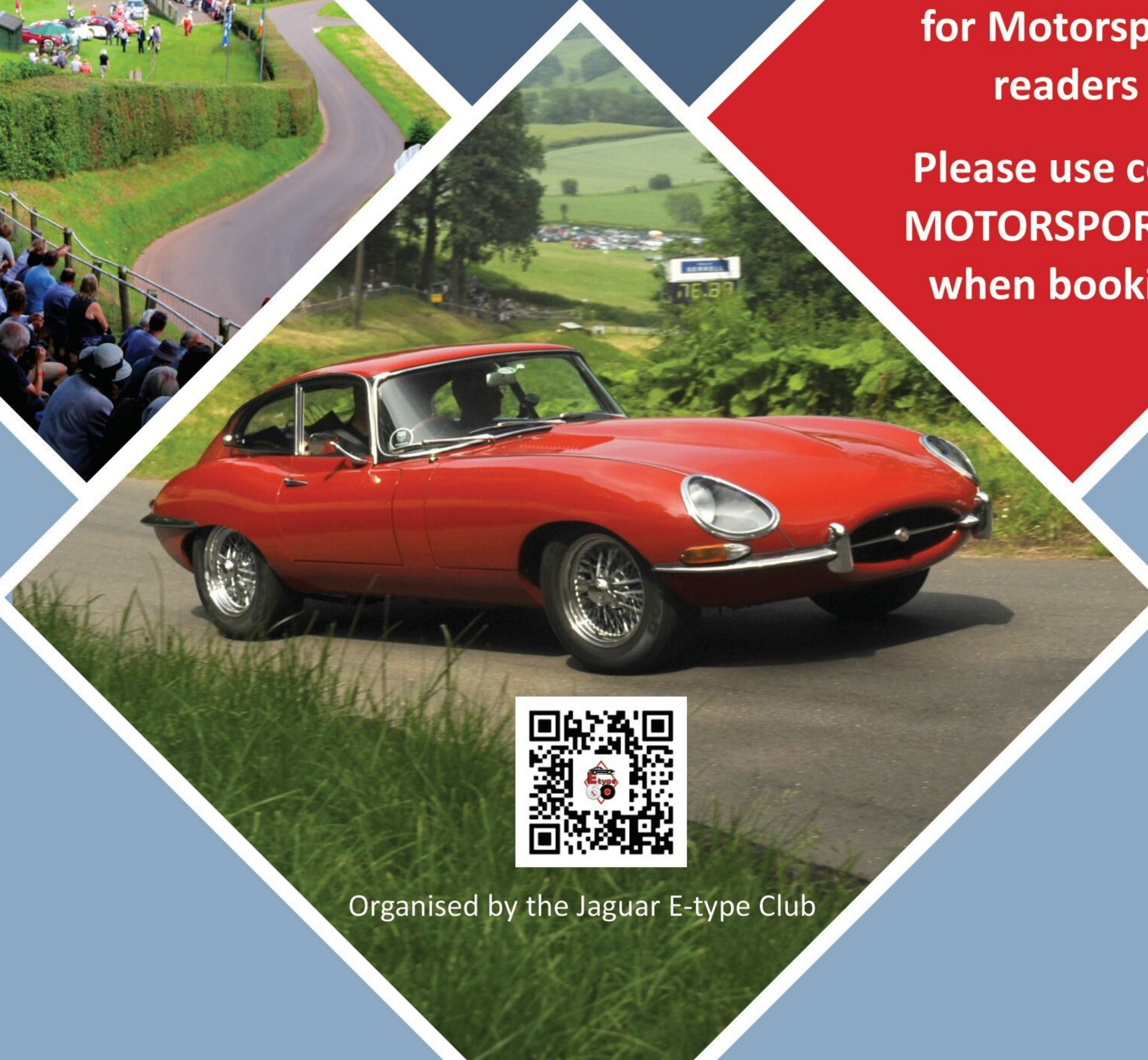
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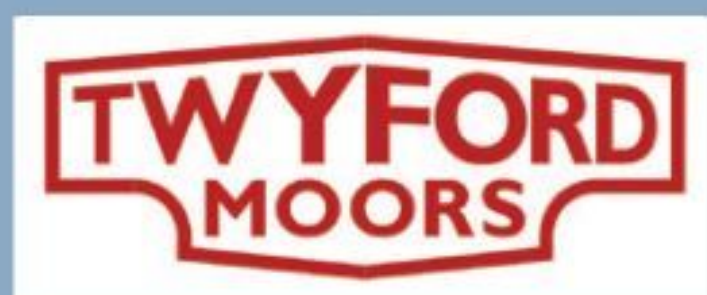
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THE MOTORSPORT INTERVIEW

Leena Gade

The triple Le Mans winning race engineer recalls how she overcame self-doubt to take charge of the Audi pitlane – and how she became comfortable as a trailblazing motor racing role model

WORDS: DAMIEN SMITH PORTRAITS: RICHARD DAVIES

Gade's first experience of Le Mans was 2006 with Chamberlain-Synergy, who raced this Lola B06/10



TEN YEARS AGO, IN 2011, LEENA Gade became the first female race engineer to win the Le Mans 24 Hours when she ran an Audi R18 driven by André Lotterer, Benoît Tréluyer and Marcel Fässler to victory - then did it again in 2012 and for a third time with the same trio in 2014. Such success and the fact she happens to be a woman pushed her into a spotlight not usually reserved for race engineers. Gade, like the majority who have worked with her over the years, just sees herself as a motor sport professional. Gender is an irrelevance to her, although as she has come to grudgingly accept, it might not be to the young girls and women with similar ambitions who have taken inspiration from her example.

Educated in a west London all-girls' school, Leena and her younger sister Teena have enjoyed rich, varied careers, having grown up with no discernible link to motor sport. Today, Teena is contracting for an autonomous car company having spent time at Prodrive, Skoda and in Formula 1 with Force India and AlphaTauri, while Leena heads up a UK-based vehicle dynamics centre for the Canadian Multimatic firm and continues to

race engineer the team's IMSA DPi contender in the US. Here, we focus on her Audi years and her love affair with Le Mans, the race she remains most associated with.

Motor Sport: *You had your first taste of motor racing while at Jaguar - Formula Vee...*

Leena Gade: "Awesome racing! Jaguar was a really good experience for someone who had never really done anything with cars, but it was apparent really quickly that my time in general automotive was going to be limited. I had this interest in motor sport and met a chap called Alan Harding [of AHS Motorsport,

based in Lutterworth]. He was great. He had a small out-building on a farm which had no heating, was packed with Formula Vee cars and had one mechanic. Alan would buy engines from the Brazilian VW factories and tune them on his own dyno. I told him I wanted to learn about race cars and how you put them together, and he said, 'Can you do some work experience? See if you like it. I can't pay you.'

"I took two weeks off work. I supported them building up their cars pre-season, went to every race event and ended up doing it for two years while I was at Jaguar, then dovetailed it with data work for a Formula BMW team."

M *How were you drawn to Le Mans and sports car racing?*

LG: "I took voluntary redundancy from Jaguar in 2003 and while working full-time at MIRA did a handful of A1GP races where I met people who were in sports car racing and ended up at Chamberlain-Synergy in 2006. I went with them to Le Mans, which was the first time I really understood what it was. That was the first year Audi won with the diesel engine. We were running a Lola and I remember seeing the impressive team construction at the back of the pits. 'It would



Gade sisters Leena and Teena both became race engineers; Teena went into rallying

Audi Sport
m Joest

Audi
Team



In 2011, Gade became the first female race engineer to win at Le Mans and by 2014 had completed a hat-trick

be good to work with those guys one day,' I thought. The following September some of the Chamberlain-Synergy mechanics were talking to [engineer] Howden Haynes about running a GT3 car, a Jaguar XK8. I knew the road car inside out because of my time at Jaguar. I was called a couple of days later and invited down, but when I got there 'H' pulled out the handbook for the Audi R10. I'd heard of that... He explained he was race engineering for them out in the US: 'I don't work for them full-time, but I do need an assistant and someone I can talk to when I'm back in the UK. Have you done anything like this?' I'd only worked with Chamberlain-Synergy and Team Modena, who were running an Aston Martin GT1. 'Do you think you could do it?' I said I'd give it a go...

"The first race I did was St Petersburg with Champion Racing [which was running Audi Sport North America's entry in the

American Le Mans Series in 2007]. I don't know what Audi thought. I think H said he had an assistant, then had to tell Joest and Audi it was this person who basically turned up on his doorstep. They had a load of people, but he said he didn't want them, he wanted me."

"At Spa, the pitlane lost power. You need paper and a pen"

M He showed incredible faith in you. How did it go at St Pete?


LG: "It was a real baptism of fire because I'd never even seen an ALMS race. But towards the end we were trying to work out what fuel we needed to take on for the final stop and H said, 'I've worked out we need this amount, do you agree?' I said,

'I'll work it out,' and just did a hand calc. I could see him watching me thinking, 'This is a new one.' I said what I'd worked out: this number of minutes left equals this number of laps, so you need this amount of fuel. He said, 'Okay, well that's a few seconds off what I've

got, we'll go with my number.' We happened to win that one, but I didn't know how it had gone for me, in fact I thought I'd blown it.

"Then a couple of days later he phoned and said, 'We have to prepare for the next race.' I did the rest of the season and the year after I also did the European-based Le Mans Series with H and that's when I got to know the Audi people."

M Your manual fuel calculation must have impressed Haynes.

LG: "When he asked about the fuel we needed I thought, 'Is he testing me?' Even now I still do a manual calculation. It's really important to have another method other than your computer to work these things out. At Spa in 2010 the pitlane lost power. Nobody had any computers working, all the servers went down and we had no telemetry, but the race still carried on for another 20 minutes. Nobody on the other pitstands knew how to run the race minus the computer. You need a piece of paper, a pen and a stopwatch." 

For Gade, personality is a crucial attribute behind the scenes in motor sport.

Right: the Audi R10 TDI in 2008 driven by Dindo Capello – Leena’s landmark year at Le Mans



M You were H’s assistant on the winning R10 at Le Mans in 2008, one of the great races of the modern era. A landmark for you?

LG: “Yes, H and I were contracted by Joest as freelancers. I’d say 2008 was my first proper Le Mans. There was an expectation of winning and the enemy, Peugeot, was at the other end of the pitlane. It was also the first year I got to work with Tom [Kristensen]. Up to that point and in 2007 I’d only ever worked with Allan [McNish] and Dindo [Capello]. We knew the Peugeot was faster than us and I remember at one of the pre-race meetings H made a comment: ‘They’re really quick. Like, three seconds a lap quicker.’ Sure enough, at the start they were three seconds a lap quicker, then the gap was six seconds, then 10.

“In the *Truth in 24* documentary there’s a comment from Allan on how fast the Peugeots are, and H says, ‘Get used to it.’ That was a learning experience: how are we going to fix this? Then as the race evolved, I learnt from H what it meant to never give up. He was instrumental in that race in so many ways.”

M How did you step up to full race engineer?

LG: “At the end of 2008 everything got curtailed. We did a handful of races in 2009. Coming back from Le Mans that year we were discussing what had happened, because Audi had an atrocious race. So we made a huge list of things that had gone wrong. H said to me, ‘I was talking to Ralf [Jüttner]. We were looking at the differences in the crews, and one thing that’s apparent is the way you and I work is different to how everyone else works. We need to make it all the same. Would you be interested in engineering a car?’ I remember looking at him and saying, ‘Are you crazy?’ But he said, ‘Are you?’ I said, ‘I don’t know whether I’d be good at it.’ ‘That’s not the question: yes or no?’ Again, I said I’d give it a go.

“They gave me quite a few tests to see what it was like. I’d always been in the shadows with H, but I’d learnt from him how to talk on the radio, how to approach problems, how to approach mechanics. I learnt everything I know from that man. So at the tests they were looking at that dynamic: how does she work with the drivers, the other engineers? It’s easy to want to be a race engineer. It’s a different job when you get there. Your personality has a huge bearing, the ability to be a leader and then hold your hand up when you make a mistake. Own it. You have to know where your car crew is at. Are they in a place where everything is calm, collected and organised? All of that stuff is a personality thing. It’s all well and good doing simulations, but if you can’t talk to a team you have zero chance of being a race engineer.”

M When was your first race running a car?

LG: “Silverstone in 2010 with Dindo and Timo Bernhard. Allan and Tom were in the other car engineered by H. We did three races that year after Le Mans for what was then the ILMC [Intercontinental Le Mans Cup, the forerunner to the World Endurance Championship]: Silverstone, Petit Le Mans and Zhuhai, and I had three different sets of drivers each time. With Dindo and Timo at Silverstone we finished third; the car was really bad, it was understeering everywhere. They had quite different driving styles. It was so bad Timo gave me his trophy and said, ‘This is to remind you how you shouldn’t run a car.’ Thanks!”

M How did you find it, calling the shots?

LG: “There were doubts. I wouldn’t say it was plain sailing. I certainly felt I had a huge amount left to learn. As we were heading into Christmas they hadn’t decided on the car crews for the year after and there was no guarantee I’d be engineering a car. When they’d asked me I turned it around and said, ‘Do you think I can?’ They said, ‘Yes, you’re good enough to do it.’

“What I didn’t know, at some point during 2010 they had asked the drivers what they thought of the engineering teams and who they wanted for the next year. Out of the three crews, two of them said if they had a choice they’d want me and one of the data engineers.”

M In 2011 you formed a bond with Lotterer, Tréluyer and Fässler.

LG: “We’d done the odd test but we hadn’t done much together and didn’t know each other very well. There was a big difference in the way they approached stuff and as the third car that year they were realistic about their chances at Le Mans. The expectation of winning was still there but it wasn’t as high as for the regular guys. Their approach was ‘control the things we can control’. Ben in particular was very good at compartmentalising feedback and the other two started to do the same. They recognised the level of inexperience in me, but they knew there was an entire team behind us that could help.

“They supported me with everything I was doing and speaking very honestly and openly was something we did for the remainder of our time together. All the way through to the end in 2016 and my final race with them at Le Mans, there was never any point when I felt uncomfortable in saying to them we need to change the way we are working. We did have some heated team debriefs but at the

A close connection was formed with Audi drivers André Lotterer, Benoît Tréluyer and Marcel Fässler



end of them we all knew it wasn’t personal and it had been done for a reason. I’m very close to them and still keep in touch.”

M What are your memories of that first Le Mans win together in 2011?

LG: “That was another one of those times where you have to learn very quickly. When Allan went out [McNish crashed heavily at the Esses early in the race after colliding with a backmarker], H was on the pitstand to the left of me and went very pale. Then we saw him get out and we knew he was okay. Rocky’s was the one that was really scary [Mike Rockenfeller also collided with a backmarker, this time in the dark in the eighth hour, flat out on the Mulsanne]. All we could see was a Meccano toy kit left on the track. [Remarkably, Rockenfeller walked away.]

“Then it became one Audi against four Peugeots, and they were very quick. All we could do was try and win the race. One stop decided it at the end. We had a slow puncture, but fortunately we had Michelin with us. After two major accidents the last thing I wanted was to have another one

and for something to happen to a driver, but they assured me that keeping the tyre on for another four or five laps wasn’t going to be a problem. We told André, ‘You have a puncture,’ and he’d already spotted it on the dash. We told him just to keep going. There was a lot of debate about whether to change just one tyre or all four at that last stop. Tom [Kristensen] was instrumental in saying just give him four new tyres because they are not expecting it down there. You’ve got the gap, just do it. That

caught them by surprise. On the live feed you could see the Peugeot garage giggling because I think they thought they’d done it, but all of a sudden we changed tyres and left the pits with a gap of five, six or seven seconds on fresh rubber. They glanced back on the live feed to the Peugeot garage and you could see their faces - and then the gap started to increase. Then the Peugeot guys started crying - and I giggled. Really immature.

“When the car crossed the finish line I turned around and everyone else in the pit was crying and I couldn’t understand why. In my head I understood what was going on and we were going to make it to the finish line, whereas everybody else was saying, ‘Oh my God, that was so close.’ Well, 13 seconds is still quite a lot, guys, even after 24 hours.”

M The victory put you and the drivers firmly on the map. Then you won again in 2012.

LG: “That was a little bit different to the previous years. From December 2011, I started spending much more time at Audi Sport in Germany. They wanted to have a second test engineer to support the full-time test engineer they had, but the person needed to be based in Germany. Ralf asked me and said they could fly me back every weekend, and I asked, ‘Can I not just live out in Germany?’

“They had to make a decision how many cars were going to race in what was now the WEC and the first year of running the hybrid. We had a glut of 12 drivers, like Marc Gené, who had been at Peugeot until they pulled out. Audi could decide how many hybrid and non-hybrid cars they could take. The hybrid system then wasn’t powerful and you could still run the car with the hybrid turned off.”

“As the race evolved, I learnt what it meant to never give up”



By 2016, Gade felt burnout and had already left Audi before the team withdrew from LMP1 racing

M *What was it like adjusting to running the hybrid?*

LG: “In January 2012, I asked for my entire race crew for testing and it was a tall ask. I knew to be competitive in 2012 we needed to know everything about that car and one of the problems with a team that’s not all based in one location – Joest was never a part of Audi Sport – is you very quickly rely on third-party reports or conversations to find out what’s been going on. So I asked my race team to do every single test and most of them saw the benefit, although I don’t know whether they ever forgave me. The testing was intense in 2012. In the run-up to Sebring it was quite a handful to deal with the flywheel system. Because we were on endurance duty you always had to keep going. If we were targeting 6000km it didn’t matter what broke, you had to replace it, start again and keep going, to the point where it was soul-destroying.”

M *What do you recall about the 2012 race?*

LG: “I’m not sure Audi will appreciate me saying this, but our hybrid only went one hour into the race and yet we still won. Some of the other competitors knew about it. The system was tough to work with and there were all sorts of issues. There was one safety car, which worked in our favour because Marcel had a spin at Porsche Curves and said he felt a hit on the back of the car, so I pitted him immediately. It

was at a point where André wasn’t ready to get in the car. He was still upstairs in the driver room. When the car came in, Marcel got out. There was no driver to get in. I repeatedly told the crew to look at the back end of the car and they couldn’t see any damage. In all the melee the tyres had been called out but they never got confirmation to be put on and we’d done four stints without changing by this stage.

“So André eventually jumped in and off he went, then the car stopper came to me and said, ‘Hey Leena, you know we never changed the tyres.’ I looked at him and said, ‘Why didn’t you?’ ‘Because you never told us to...’ Oh s**t. I said to André, ‘Just to let you know, your tyres are four stints old, we forgot to change them at the stop.’ I could hear everybody on the intercom going, ‘What the hell?’ He said, ‘They feel fine, we should keep them on.’ I said, ‘No we shouldn’t!’ Then the safety car came out and Allan was right behind him. They must have known what happened. But André beat the safety car when it came out of the pits, and Allan didn’t. That win meant a lot because I didn’t want us to be the one-hit wonder.”

M *Your car won the inaugural WEC title that year too. What was it like inside the team?*

LG: “There was lots of politics through that year. After Le Mans we started out having one hybrid and one non-hybrid car to finish off the rest of the season, but that became two

hybrids. Politically, if the hybrid is supposed to be faster why did we decide that it was sensible to impede the other car by not giving it the system? I wouldn’t say we dominated in terms of speed, but we had a good base from the start, from 2011 with the car crew being organised in a certain way, and with this open mentality where we could discuss anything. Me and my number one mechanic, we used to have some amazing arguments, but it was never personal. We took the championship in Shanghai, so it went down to the final race and it was a nice way to finish the season. But I did think we’ve won the world championship, we’ve won Le Mans twice – what else is there left to do? I started questioning whether it was time to stop, which was silly because I’d only just started properly race engineering.”

M *But you did keep going and won Le Mans with the same drivers for a third time in 2014. What changed during that hybrid era?*

LG: “We went from the flywheel system to having a battery system. My least favourite car was the last one, the 2016 R18 – I hated it so much. It’s the only one I don’t have a model of because so much stuff used to go wrong on it.”

M *Hybrid technology changed the way you went racing. Was it more challenging?*

LG: “In 2012 and 2013 we didn’t have energy management to worry about. It was only in

2014 when new rules came in, we had smaller tyres and so on, that energy management became a factor. And the competition stepped up because there were now three manufacturers and one of them happened to be Porsche, the sister company to Audi.

"I remember when the Equivalence of Technology formula was being discussed, Chris Reinke, who was the head of the project, came to me one evening saying he had a series of questions from a journalist who wanted our take on EoT and how it affected driving style. Does energy management make the racing more relevant to road car customers?

Ridiculous, it absolutely doesn't.

Who lifts and coasts on the road, so why were we doing it? Slowly over time from 2014, we tried lots of different ways of handling energy management. In 2014 it started off with drivers doing it manually until we realised that was a mistake. They had light indicators in the car that told

them if it was working or not working, but a bit later on we made it more automated.

"The six-hour races were fun, but we were hampered compared to Porsche and Toyota because they had bigger hybrid systems and at the shorter tracks that made a difference. And the EoT never really reflected that. Every stint we did was one or two laps shorter than the others and we were never given extra fuel to make it closer. But at Le Mans we were relatively even, which is what mattered most."

M *You must have learnt a lot from that period.*

LG: "When I look back, yes. Towards the end with the aero package on the Audi, that was quite something. Managing all of that was a good learning experience and having now seen a bit of GT3 with Bentley and how Balance of Performance is managed there, and having done IMSA into my third year with Multimatic's Mazda programme and how the DPis are brought together, I can see how strategy works in a different series. The WEC was fun, but it could have been even better racing. BoP will never be perfect but those complex cars we had and the driving styles they had to adopt in some instances, we took away a lot of the natural feeling they had from the tyres because there were so many other systems in the background. Now a lot more is in the drivers' control. If they run out of fuel because they didn't hit a target that's down to them, not us."

M *How did you feel when Audi pulled the plug on LMP1 at the end of 2016?*

LG: "I'd already escaped. I'd left in June after Le Mans. I'd made the decision at the end of

2015 that I wanted to stop and do something different. There weren't any other avenues inside Audi Sport and it was a chance to get away from it all and stop race engineering. At the time I was completely convinced I didn't want to be a race engineer. I was tired, worn out, quite depleted of the energy it takes. I went to Bentley. We had no idea the pull-out was coming, there was never any mention when I was there. I was quite surprised. I guess Dieselgate [the emissions scandal that rocked VW in 2015] was always going to catch up with us. It had already started when Porsche came in because the

perspective of VW having two manufacturers fighting each other yet being part of the same group... We were allowed to race, we had a diesel, they had a petrol - at some point it was going to have to stop, and there was always a feeling that it would be Audi that would pay the price."


M *You've now reluctantly accepted your role-model status. How did you come to terms with it?*

LG: "I've just had the same question from one of my oldest friends for her podcast. We were talking about what we were like at school. She became a journalist, which was what she always wanted to do. She said to me, 'When we were kids we were brought up in the west side of London, the school we went to was a girls' school and there was a large proportion of girls from ethnic minorities.' She's Indian as well. She said, 'My only role model on TV was Moira Stuart. There was only one female

black news presenter. Did you have any?' I said there weren't any. 'So do you understand how that's important?' That was a cunning way of making me realise it is.

"I only noticed it for the first time in 2011 when Audi kept getting interview requests with me. At a meet-the-team session no other engineer was invited, except me. I didn't understand it. There was more after Le Mans. Audi was perceptive enough to say you have a choice on this, you don't have to do interviews if you don't want to. We can say no, but it's beneficial to you and to us. It's something unique that nobody else has. I said, 'Okay, as long as it doesn't get out of hand.' I did an advert for the US market which was shown during the Super Bowl. There's not many race engineers who can say that."

M *Do you roll your eyes when people ask the question?*

LG: "I never embraced it at first. Hey, I was given a job and was told to go and win a race and that's what I did. But it is different because there aren't other women doing it on a daily basis. If there were we wouldn't be talking about it. It's been 10 years since my first Le Mans win and there hasn't been anyone else, which begs the question why? Although I noticed at Daytona this year the paddock had more female mechanics and engineers around and my data engineer is female. 'Did you notice?' she said. Yes and I think it's mega. IMSA are probably not aware it's on their doorstep - and we're not going to tell them either. In a way, change like that is a gradual process and if you force it sometimes it doesn't happen. I'm much more comfortable with it now - even if I still cringe." 



Gade works for Multimatic now and engineers the team's Mazda DPi in the US IMSA series



MY Greatest RIVAL

**DAMON HILL ON
MICHAEL SCHUMACHER**

How do you up your game when a ruthless machine like Schuey arrives? **Damon Hill** recalls the soul-searching required to take on a genius



RIVALRIES START WITH YOUR team-mates. In Formula Ford it was the whole gang of them. I'd come from bike racing and this was the first time I'd been up against people who could pull something else out of the bag.

My toughest rival? It has to be Michael Schumacher. At the start of 1994 he hadn't won a championship, but he'd already been putting the pressure on Ayrton Senna, and then, after Imola, the pressure was turned on me, the full weight of his potency. Nobody was fully aware of just how much brilliance he had in him, though it was pretty obvious by the end of the year when he beat me to the title by one point after the collision in Adelaide.

People talk about Adelaide as the low point, our rivalry at its most intense, but for me it was 1995 when it got really serious. I ran into him at the second chicane at Monza, and we'd already collided at Silverstone. Coming into Priory he went very wide, opened the door, almost like he was inviting me in there on the inside of him. I'd been catching him fast, on new tyres, and I think he realised I was going to pass him, that I had an advantage. He turned in on me and we both went off. Part of his genius was out-psychoing people into those situations.

He was ruthless, very tough emotionally; there was no camaraderie, no empathy with competitors. He gave nothing away. That's not a criticism, that's how he was - 100% effective as a competitor. He was good with his words too, sticking the knife in.

You can look at what a rival is doing and maybe learn something. I watched a replay

of qualifying in Monaco with Patrick Head [technical director at Williams] and, seeing Michael pass the barrier on the inside of Tabac, I said to Patrick, 'Bloody hell that was close,' and Patrick just said, 'Well, that's what you're supposed to be doing.' I told him, 'Forget it, I'm never going to go that close to the Armco there.'

He was just relentless. He had all of us on the ropes for some time, but the equipment finally came to me with a great car in 1996 with the FW18 when Michael's Ferrari wasn't good enough for him to challenge the Williams. He was eight years younger than me, and I've often thought that if I'd started karting as a child, maybe I would have that extra edge. Michael was able to drive at a very high level while still having spare capacity to think about all the other things. Most of my capacity was taken up with pushing myself to the edge.

You can think you're working hard enough, you're on the limit, but then someone like Michael comes along, and it's a watershed. Can you change your personality, your character, to deal with a rival like Michael? It's not so easy. You follow your nature and, if you don't, you become unhappy. Michael was not a bad person. Professionally he was what he needed to be. When I won the title in '96 he came to congratulate me, which was a nice gesture."



Head-to-head

Hill	vs	Schumacher
22	WINS	35
20	POLES	23
19	FASTEST LAPS	38
42	PODIUMS	63
360	POINTS	537

Stats from F1 1992-99. Schumacher was disqualified in 1997 but his results for that season have been kept for analysis



Ayrton Senna 1991

Brazilian Grand Prix 'clear visor', full-size display helmet. In stock.



Nigel Mansell 1989

Ferrari 'deep visor' strip, full-size display helmet. Signed option. In stock.



Kimi Räikkönen 2007

Ferrari F1 World Champion, full-size display helmet. Signed option. In stock.



PRODUCT OF THE MONTH

Michael Schumacher, full-size Ferrari helmet

Ex-Design Museum, 'Ferrari: Under the Skin' display helmet.

Michael Schumacher won seven Formula 1 championships, in 2006 finishing second in the Driver Standings, driving for Ferrari, only 13 points away from an eighth title, his final win coming at the Chinese Grand Prix in Shanghai.

Michael Schumacher, full-size Ferrari display helmet. This superb early-Ferrari career helmet was commissioned by a world famous Ferrari collector and used in The Design Museum's 'Ferrari, Under the Skin' exhibition. It presents in mint condition and comes with Certificate of Provenance.



Alain Prost 1991

Ferrari full-size display helmet. Signed option. In stock.



Michael Schumacher 2006

Ferrari, final season, full-size display helmet. In stock.



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Flashback...

For two decades **Maurice Hamilton** reported from the F1 paddock with pen, notebook and Canon Sure Shot camera. This month we are at an FIA media scrum in 1987, with Enzo Ferrari in rare attendance

ON TUESDAY MARCH 17, 1987 I was among eight members of the British media flown to Italy by the FIA to witness the signing of the latest Concorde Agreement. It turned out to be a long way to go for lunch.

The news value extracted from the day was zero. But as an indicator of the latest state of Formula 1 politics intermingled with Latin chaos, it was priceless. By eschewing the grand surroundings of its headquarters in Place de la Concorde and choosing Maranello, the sport's governing body was not only paying deference to Enzo Ferrari's 90th year but also the fact that, as ever, the Old Man was quietly calling the shots.

The culinary logic of using the Cavallino restaurant, opposite the main gates of the Ferrari factory, was immediately lost as 200 journalists and cameramen were crammed into an L-shaped room designed to hold 60 diners. Several of the 'guests' appeared to be without

a valid invitation; a shortcoming elsewhere but, in Italy, an invisible order of merit.

I enjoy Italian food and the drama that usually accompanies its presentation at the table. But this multi-course meal was something else, as we perched cheek-by-jowl and watched starched-white waiters noisily bouncing off each other and tripping over television cables like some gastronomic juggling act.

The top table seating plan was a significant indication of F1's power chain. With Enzo Ferrari in the middle (light jacket), to his right was Jean-Marie Balestre (FIA president) alongside Bernie Ecclestone (the FIA's new vice president of promotional affairs) with, to Ecclestone's right, Aleardo Buzzzi (representing Marlboro). On Ferrari's left, his son Piero Lardi Ferrari and Franco Gozzi, Ferrari press officer.

This rare public appearance by Enzo had the Italian photographers literally tripping over themselves. Predictably, ambition gradually overwhelmed decorum as the lensmen elbowed closer and forced a rebuke from the

Commendatore. I don't know what he said but it had a stunning effect. Cameras were lowered instantly and the place assumed a reverential silence as the Old Man began to speak.

The translated platitudes were never going to create headlines any more than Balestre's flowery rhetoric or Ecclestone's whispered and evasive answers to the few questions allowed from the floor. Then we had a fattening but delicious dessert and flew home.

It was an executive jet, but it must have been designed for small executives. Further discomfort on the two-hour flight was caused by a lavatory not being part of the aircraft's spartan interior. Having fed and watered the enemy, it was tempting to think this was retribution plotted by new-found friends Balestre and Ecclestone, and the real reason for being asked to share celebration of the new agreement. Someone did say they caught sight of pen being put to paper at one stage - but we couldn't be sure. As for witnessing a circus act of no equal, however, there was no doubt.



LETTERS

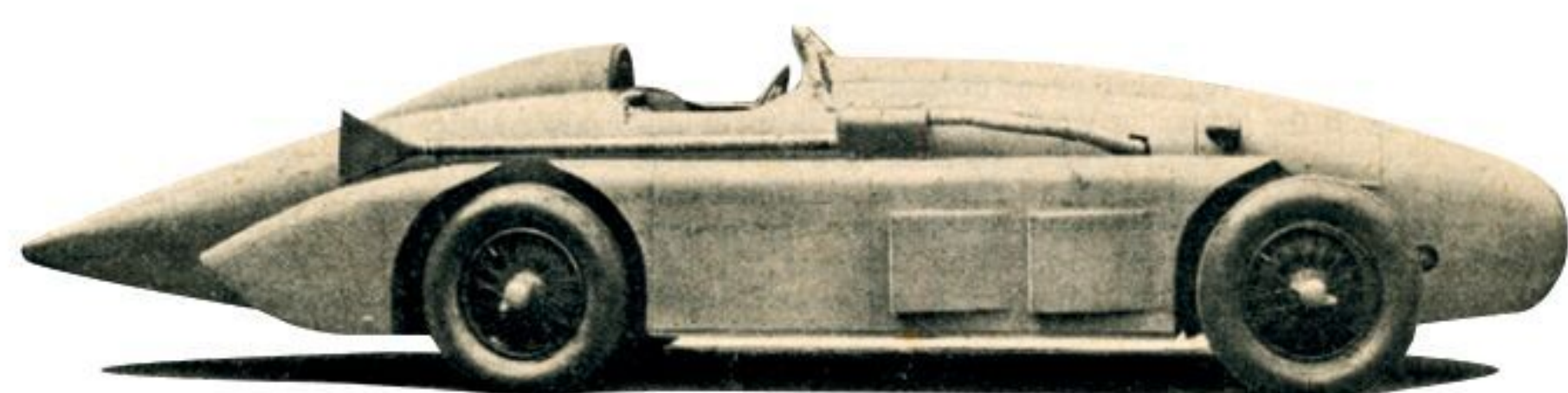
SIR JACKIE STEWART'S VIEW THAT A "TOO FRAGILE" LOTUS STYMIED JIM CLARK'S success at Monaco [*Monaco masters*, May] deserves further scrutiny, particularly given that Chapman's cars won five Monte Carlo races between 1960 and 1970.

Few would disagree with Stewart's premise that 'Chunky' Chapman's approach to car design often compromised his machinery's resilience, but Jimmy's failure ever to win a Monaco Grand Prix deserves some context. Clark started four of his six Monaco Grands Prix between 1961 and '67 from pole (he missed the '65 race due to a clash with Indianapolis). He suffered four retirements, two of which can be directly attributed to Lotus design fragility (suspension failures in 1966 and '67). Gear and engine troubles halted his Lotus 25 in 1962 and '63.

Although Clark reached the finish of his first Monaco Grand Prix in 1961, a stop to rectify an ignition lead fault destroyed his race. His 1964 event was marred by a scrutineer-enforced pitstop to address trailing parts after swiping a marker - but Clark still finished fourth.

Lotus fragility certainly played a part, but so did bad luck. And tragically we never saw Jimmy in a Lotus 49 there - a machine that was to be victorious in every Monaco Grand Prix it started.

MAX KINGSLEY-JONES, IVER, BUCKS



Built for Brooklands but seemingly never raced there, the Graham-Paige with pontoon radiators

I WAS AMAZED TO SEE IN THE JUNE ISSUE [*Letters*] a photograph of the streamlined car I had been looking at that very morning in *The Autocar*. With the WO Bentley Memorial Foundation, I am involved with a biography of Frank Clement, the racing driver and engineer who worked and raced for Bentley Motors in the 1920s. This morning I was looking through Frank's archived cuttings from the newspapers and motoring journals of the day including SCH 'Sammy' Davis's column for *The Autocar* under the pseudonym Casque.

In *The Autocar* of July 11, 1930, the above photograph was captioned, "Built with side radiators resembling those of the Golden Arrow, this machine, a six-cylinder Graham-Paige, is to race at Brooklands."

Sammy describes the car as built "with a great deal of trouble and ingenuity" by John Pillin who ran a garage at Beckenham, for Mr G Pauling. Pauling is mentioned in Bill Boddy's Brooklands work as an entrant of a supercharged Graham-Paige in the BARC Closing meeting of 1930, but there is no mention of car or driver in the *Motor Sport* report. By 1931 he was driving a Riley

and had possibly moved the Graham-Paige on. However, as suggested by Iain Nicholson, he had registered it for the road. After this I do not know what happened to this car. What a pity the Edinburgh photograph is undated.

Sammy Davis notes that the 4.7-litre six-cylinder Graham-Paige chassis had had to be "practically reconstructed from end to end". A Reval supercharger fed the side-valve engine. The radiators were in pontoons on either side, with a neater appearance than your - presumably later - photo showing a huge rectangular opening, perhaps due to overheating problems. The original dynamo lighting system and starter had been retained.

I hope that others are able to solve the mystery of what the future held for this amazing-looking machine.

WILL MORRISON, BY EMAIL

THE JACKY ICKX INTERVIEW [MAY] BRINGS back my fondest motor sport memory. In 1968 at the young age of 13, I was fortunate to attend the 6 Hours at Watkins Glen where the No6 Ford GT40 driven by Hobbs/Hawkins had a substantial lead of maybe 40 seconds over the No5 GT40 of Ickx/Bianchi with approximately one hour to go in the race. Here I was sitting on top of my friend's father's 1960 Ford Falcon station wagon, stopwatch in hand timing the gap between the two cars. As Ickx kept closing the gap it brought me to my feet in nerve-racking anticipation. Then it happened. Here came No5 driven by Ickx with

his headlights on ahead of No6. He would go on to win, and a new racing fan was born. To me Jacky Ickx driving that beautiful Ford GT40 dressed in the Gulf colours of light blue and orange to victory was something that will be etched in my brain forever. You were the best, Jacky.

TOM PERRY, ROCHESTER, NY, USA

WITH REGARD TO MARK HUGHES' (always interesting) regular feature in the June issue, I was reminded of a quotation by Sir Sydney Camm, designer of, among others, the wonderful Hawker Hurricane: "All modern aircraft have four dimensions: span, length, height and politics."

I do feel there to be a valid analogy with modern F1...

CHRIS MABON, LECHLADE, GLOS

IN HIS EDITORIAL IN THE JUNE ISSUE, JOE Dunn reflects on the participation of women in modern motor sport. But it isn't necessary to look at the rarefied world of the Indy 500, let alone the W Series or the bizarrely contrived Extreme E for examples of diversity, not when there's ample evidence so much closer to home. In the research for my recent book (*Driven*, an elegy to cars, roads and motor sport) I attended as many different UK motor sport events as possible over a 12-month period and two genres stood out as being almost completely gender-blind. Drag racing has a rich history of female participation, from Shirley Muldowney in the 1970s to Anita Makela and India Erbacher in the present day. As for Autograss, it is not unusual to see up to three generations of the same family competing in this spectacular, accessible but under-reported series. Mainstream motor sport could learn a great deal from either genre, because they offer spectacle and diversity often lacking elsewhere.

JOHN ASTON, THIRSK

SIMON ARRON'S *FULLY CHARGED* ARTICLE [May] about Extreme E at least didn't make the same claim as was made in a BBC News report, which claimed it to be, "... the first gender-equal" form of motor sport. Of course, nothing could be farther from the truth, as all forms of motor sport are gender-equal. There is no gender differentiation as there is in tennis, football, and most other



Ferrari designer Carlo Chiti captured in the Monza paddock in characteristic pose, and dress, by reader Michael Cookson

sports. The only differentiator is the stopwatch. (Or when you stop the stopwatch as a much-missed commentator once said.) It could be said that Extreme E is the first non gender-equal form of motor sport, being based on the artificial construct of a male and female competitor in each crew.

IAN McRAE, NORTH LANARKSHIRE

I WAS DELIGHTED TO READ DEREK HILL'S article about his father and the reborn Sharknose Ferrari he drove at Reims in 2019 [*Lost Ferrari rides again, June*]. I was there and had the great pleasure of a chat with Derek, as well as talking with one of the mechanics who took part in the recreation of these magnificent cars, one featuring a 65-degree and the other a 120-degree V6. The story of their recreation is told by Jason Stuart Wright in the remarkable *Sharknose V6* by Jörg-Thomas Födisch and Rainer Rossbach.

Reims brought Phil Hill's first start in an F1 grand prix and Fangio's last, in 1958. The pits and further historical buildings along the narrow straight between Thillois hairpin and the right-hander shortly before Gueux have been restored by a group of dedicated fans with more enthusiasm and skill than money, Les Amis du Circuit de Gueux.

Their meeting of September 2019 was a big popular success starring both Ferraris and

Jim Clark's original Lotus 21. The kids were enthralled at the sight and noise of the old race cars, as I was myself in period, merely watching them on TV and photos: the dream lives on. After two years of Covid break, the next event will take place in September 2022. Meanwhile, we'll be looking forward to the release of Derek's film. I can't wait!

JEAN-MARC CREUSET, GUEUX, FRANCE

YOUR PARTING SHOT PICTURE OF CARLO Chiti in the June edition is very similar to a picture I took (*above*) some 22 years earlier in the paddock at Monza during the 1960 Italian Grand Prix.

Carlo - still wearing a tie - is sitting outside the garage housing Phil Hill's winning Ferrari, possibly contemplating the Sharknose Ferrari 156 which he designed and which was to appear in 1961. The 1960 Italian GP, which had been boycotted by the British teams over the use of the banking, was the last to be won by a front-engined car.

I happened to be at Aintree for the 1961 British Grand Prix where Wolfgang von Trips won in the Sharknose Ferrari. This grand prix was the first time a four-wheel-drive car entered a GP, the Ferguson-Climax driven by Jack Fairman, and I believe it was the last GP in which a front-engined car was entered.

MICHAEL COOKSON, AUDLEM, CREWE

THE ISSUE OF TRACK LIMITS IS SPOILING the show. There is little consistency in how they are applied, and frequently no slow-motion replay to show the TV audience the degree to which the limit has been exceeded. Once live attendance is returned to normal, there is no way the trackside crowd can see the transgression.

On street circuits there is no issue. You leave the road, you hit the barrier, and your race is over. Back in the day, straw bales, trees or actual kerbs formed the natural track limit. Exceed the limit, and suffer the consequences.

Wouldn't it be simple to say, the 'black stuff' is the track, anything else is not. The cars are fitted with GPS devices and the width of the car is known. An electronic device could simply be triggered to reduce engine power by x% for say 10 seconds should the car not stay on the black stuff. That would be sufficient motivation to the drivers to keep the car on the track, while not spoiling the show.

ROBERT HINDLE, MISSISSAUGA, CANADA

I WAS PLEASED TO READ IN THE JUNE ISSUE [*Matters of Moment*] that MSV has agreed to purchase Donington Hall and the surrounding estate. Its commercial plans for the property seem sympathetic to the circuit. However, questions still remain over the future of the Donington Collection, which closed in the autumn of 2018.

At the time, Jonathan Palmer said that he was committed to preserving the racing heritage of Donington, but that MSV had decided not to continue funding the museum as it felt that a "general interest" display (referring to the latter-day amalgam of racing cars and military vehicles) in such old buildings was not the best way to achieve this.

Surely there is a place for a large museum to celebrate Britain's motor racing heritage and the importance of motor sport to the British economy? Although a number of the collection's star exhibits had to be sold off, the bulk of the car collection remains intact, though Kevin Wheatcroft has been quoted as saying that it would cost in the region of £4m to build a modern museum to house both the racing cars and military vehicles.

It is fair to say that Kevin's first love has always been his military vehicle collection, but though he has also stated his commitment to preserve the car collection, could he be persuaded to sell it as a whole, if a buyer with suitably deep pockets could be found who could offer firm guarantees about its future, ?

Bernie Ecclestone, a man to whom motor racing has been good, springs to mind, as he has a superb racing car collection of his own, which apart from the odd demonstration run and display, is, sadly, not on public view.

The two collections combined would provide a truly world-class visitor attraction, and as even Bernie must concede that he won't live forever, then maybe it's time to put something back?

NICK PROCTER, LONDON SE12

CONTACT US

Write to *Motor Sport*, 18-20 Rosemont Road, London, NW3 6NE or e-mail, editorial@motorsportmagazine.co.uk



It could almost be 1961 again. Reborn Sharknose Ferrari about to re-enact Phil Hill's Reims debut

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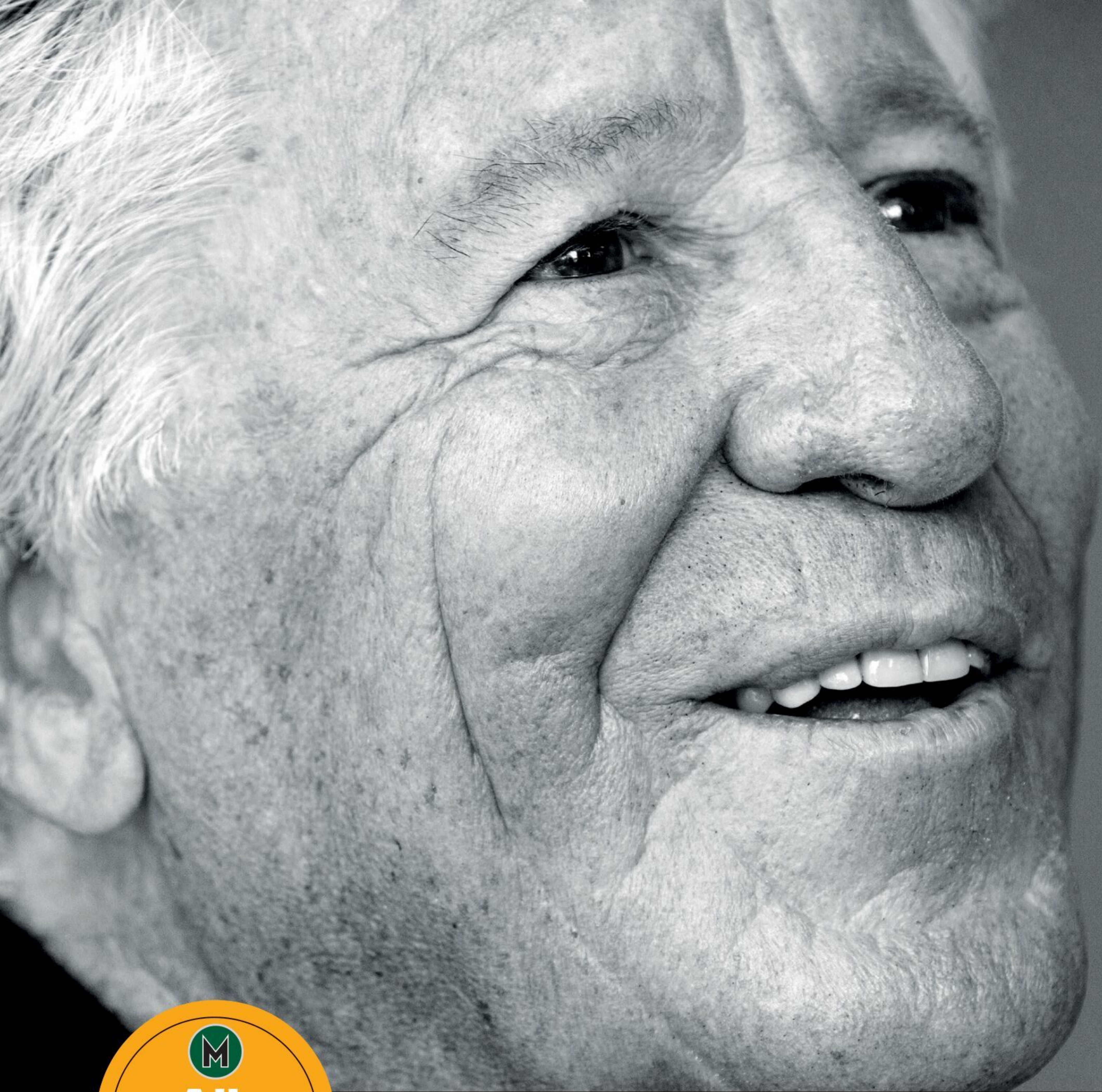
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*“You have to
be able to adapt.
To find the limit of
every race car”*

Motor sport is infused with the romance of them, but what makes a great all-rounder – a driver who can win in anything? **Rob Widdows** asks two legends who are uniquely placed to discuss the skills required

"All-rounders are special. Just because you're a good road racer doesn't mean you'll do well at Indy..."





Back in what some like to call the 'good old days' racing drivers were freelancers, heroes for hire, hustling a grand prix car round Monte Carlo one weekend and taking a Lotus Cortina by the scruff of the neck the next.

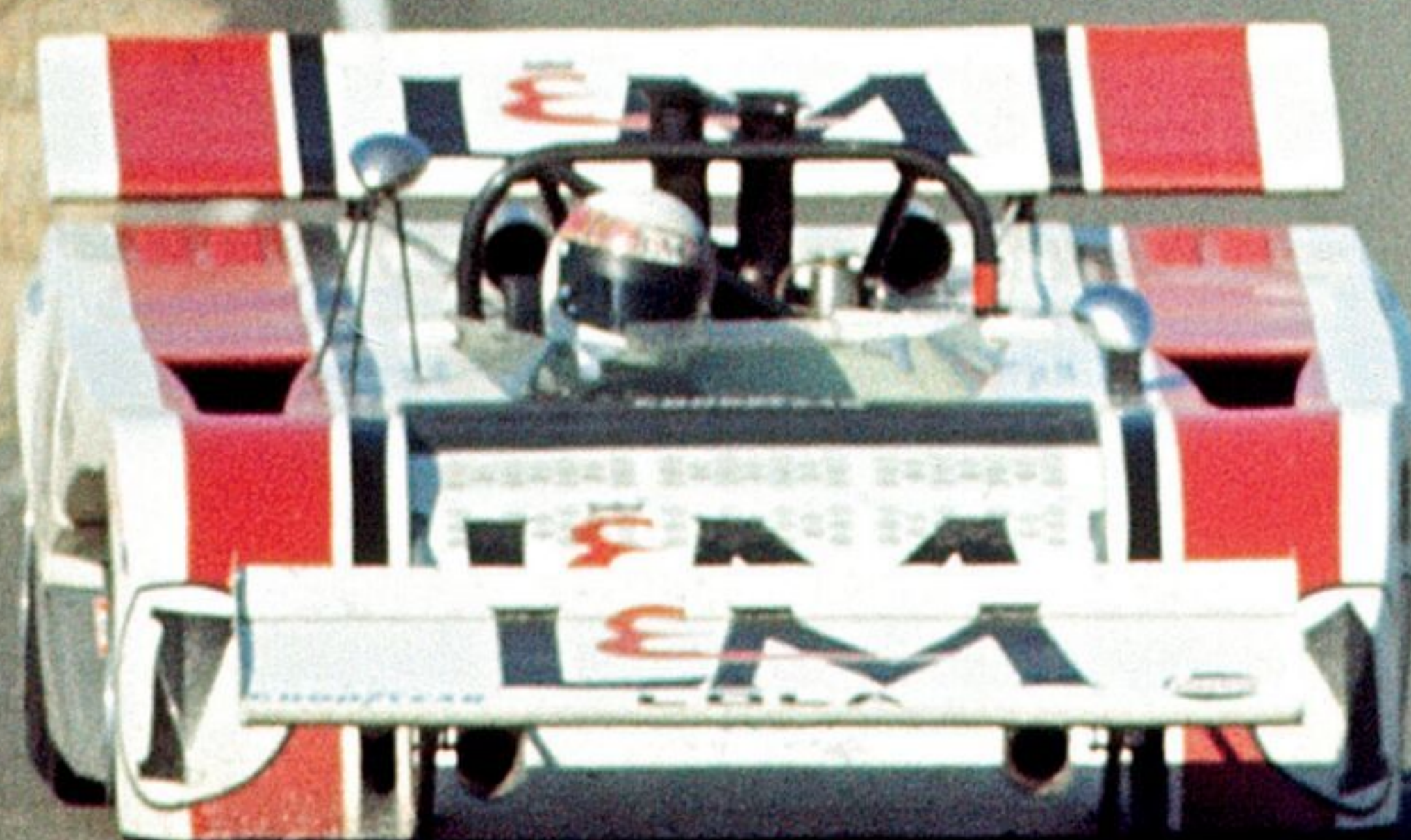
Unlike today where specialisation is key, to be a racing driver half a generation ago you had - almost by definition - to be an all-rounder. One who could adapt their style to whatever machinery was available.

But to dominate across multiple disciplines was still rare. To move between such different cars successfully you needed to have been born with exceptional natural talent, a God-given ability to win granted to just a few drivers in each generation. Such men speak of being able to feel what

a car is doing at any given moment, to anticipate its foibles and instantly react to both car and conditions. They might also need a capacity for long-distance travel, to capture the rewards.

Most racing fans will have their own shortlist of such multi-talented drivers but Sir Jackie Stewart and Mario Andretti surely exemplify the skills required to win in so many different arenas.

To celebrate this month's cover story we asked these two legends of the sport to tell us what makes a great all-rounder, what it takes to win, whatever the weather, on everything from streets, to ovals and traditional circuits.



Jackie Stewart raced for Carl Haas in the 1971 Can-Am season in the 'Cowcatcher-winged' Lola-Chevrolet T260. Right: Andretti looking relaxed at the Daytona 500 in 1967 - a race he dominated and won. Far right: a career best at Le Mans came in 1995 for Andretti, finishing second in the Courage C34

Le Mans 1967: a brake pad on Andretti's Ford Mk IV locked at speed shortly after leaving the pits, and the wreck partially blocked the track. His next appearance was 1982

"It's all about natural ability and versatility, and once you've proved yourself, won races and championships, teams start to ask you to drive different cars," says Stewart, triple F1 world champion, Indy 500 Rookie of the Year, Tasman champion, and winner of four races in one day at Crystal Palace driving a Jaguar XK120, a Lotus Cortina, a lightweight E-type and a single-seater.

"Just because you're a good road racer doesn't mean you will go well at Indy, for example, so you have to learn new skills and that's where sheer natural ability comes in. Mario is one of the very few people who came to F1 from IndyCar and

was equally successful. Opportunity is important, someone seeing your talent and inviting you to drive. Like Ecurie Ecosse gave me my first opportunity and then Ken Tyrrell picked me up. Both Mario and I had versatility at an early age and then we developed that ability as the opportunities came along. Sometimes I think, 'Why did I do all those different races in different cars?' And of course it wasn't about the money, it was about just wanting to drive, to race and use the talent I'd been given."

Andretti agrees but adds another element. "It's the love and the passion," he says. "I wanted to be a racing driver so bad and it seemed an impossible dream,

so I cherished every opportunity to race any car I could. I was driven by curiosity too, the sport is so rich with opportunities, and - as Jackie said - if you have the skill and the desire you will be invited to race in many categories."

Andretti is arguably the greatest of all-rounders: F1 world champion, IndyCar champion, Le Mans class winner, NASCAR winner and sprint car champion.

"I always had F1 in the back of my mind because that's where my love of the sport began back when I was still in Italy. At Indy in '65 I got to meet Colin Chapman and Jimmy Clark, and I said to Colin, 'One day I want to do Formula 1,' and he said, ☛

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‘Whenever you think you’re ready, I’ll have a car for you.’ Then along came the Ford Le Mans programme, thousands of miles of testing, learning new skills from Ken Miles, Bruce McLaren. It’s the desire, the satisfaction of competing in so many different categories with top teams, that’s what I wanted from the sport. And looking back I wouldn’t change a thing.”

These two winners first met on the track at the United States Grand Prix at Watkins Glen in 1968.

“Colin put me in the Lotus for Watkins Glen, my first grand prix. I was ready, and I got pole ahead of Jackie in the Matra,” remembers Andretti.

“That really p***ed me off,” laughs Stewart back.

“I liked it a lot,” says Mario, “and then my first win, in South Africa with Ferrari in 1971. Jackie was on pole in the Tyrrell but I beat him in the race, he was second.”

“I’m getting beaten up here,” says Jackie, laughing, “but you know, at the end of the day a really good driver can win in any kind of car. It comes back to natural ability, Mario had it, I like to think I had it, and that’s what all the great all-rounders need. And - as you can tell - we’re all very competitive people. We were both lucky to have so much variety in our careers, and to race for the best teams. That’s the privilege of being seen as a great all-round driver if you like.”

“Yeah, and its the hunger to be part of every aspect of the sport,” says Andretti, “and you have to be able to adapt, to find the limit of each and every car, to feel what the car is doing. Here’s an example of what I mean... I learnt so much about racing in the wet from my sprint car races on the dirt ovals. On the dirt the track is changing every lap, just like in the rain, you’re looking for new lines, finding the grip, feeling the track surface under you, and one discipline can teach you about the other. The ultimate challenge, the satisfaction, is ‘How can I win the game in somebody else’s sandbox?’ That’s the trick, that’s the challenge you have to embrace.”

“Yes, we end where we began, it’s about versatility,” says Stewart. “There are the specialists and then there are drivers who can move from car to car and win.”

So, who do these two multi-talented champions rate as having the requisite versatility, passion and skill to be called a great all-rounder?

Mario Andretti: “First I wanna say I don’t have all the background, the facts and the figures about these drivers but I can tell you that, over the years, they all have things ◉



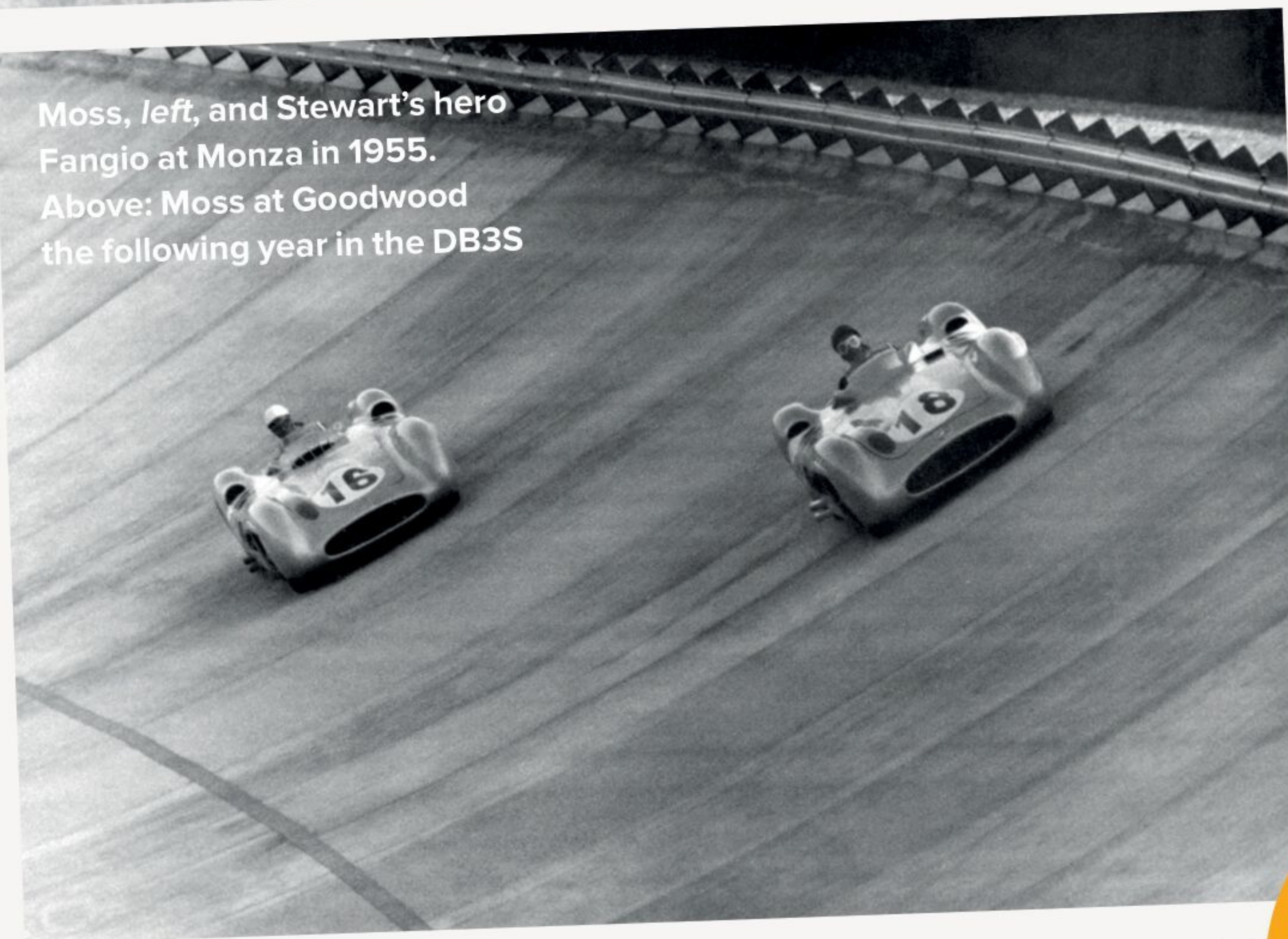
“It’s the hunger to be part of every aspect of the sport”



The Daytona 24 Hours in 1970 brought the debut of the Porsche 917K, finishing 1-2. Andretti/Merzario/Ickx trailed in the Ferrari (28). Above: friendly words at the Monaco GP, 1971



Moss, left, and Stewart's hero Fangio at Monza in 1955. Above: Moss at Goodwood the following year in the DB3S



Il Maestro Fangio, right, with young Moss in 1952; later in the year Fangio broke his neck at Monza in an F2 works Maserati



Vic Elford, here at the Targa Florio in 1970, shone in sports cars and rallying



Elford didn't quite make it in F1. His best result was fourth in his first race for Cooper in 1968. Below: Graham Hill – a favourite of Andretti's – with the Rover-BRM in 1963



in common. Versatility, natural talent, the ability to extract the maximum from any car, take them to the limit, that's their job. They are driving faster now, because the cars are faster, but a true champion will always come out on top whatever the car. That's the challenge."

Sir Jackie Stewart: "Well, yes, and we start with Stirling Moss obviously. He said that the reason he did so many races was for the money but he was joking and playing down his success. He was better, and faster, on the Mille Miglia than Fangio. That doesn't mean he was a better driver than Fangio, it simply means he was the master of the Mille Miglia. For me, personally, Fangio was my absolute hero, both on and off the track, a magnificent racer and a true gentleman, too. Stirling has to be right at the top of the list. You only have to look at how many races he won in different cars. He was a totally versatile driver with great natural ability, like Fangio. They could both drive and win in anything."

MA: "Moss yes, absolutely. I'm sure he didn't race just for the money. We would all have raced for free if we'd had to, wouldn't we? Okay the money would help to support the family, provide for them if anything happened to me on the track, and I must confess I always went for the best possible contract and you always want to negotiate the best deal. Some drivers are smarter than others, like Niki Lauda, and it's a challenge to get the most out of what you're doing when it comes to contracts. It's tough to put a price on a driver even today."

Rob Widdows: "Okay, we agree that Stirling and Fangio were two of the greatest but who else should we consider?"

JS: "Jacky Ickx, I think. He went from Formula 1 to sports car racing, which was not as competitive, not as ten tenths as Formula 1. Nevertheless he was successful in both F1 and long-distance racing. So yes, Jacky Ickx was another great versatile driver."

RW: "And Vic Elford?"

JS: "He was very good in sports car racing

but never made it in Formula 1. No disrespect at all, but there seemed to be something missing there in adjusting to the technique of driving Formula 1 cars, which require different characteristics of driving. The limits you have to go to in a grand prix car are beyond what you do in endurance racing. You shouldn't be doing ten tenths in a long-distance race whereas in Formula 1 you are right on the limit for most of the time. It's easier to go from Formula 1 to another category than the other way round because you're at the top end in Formula 1. Everything else is a compromise in comparison to the absolute precision of grand prix racing."

RW: "AJ Foyt has his place here too, doesn't he, Mario?"

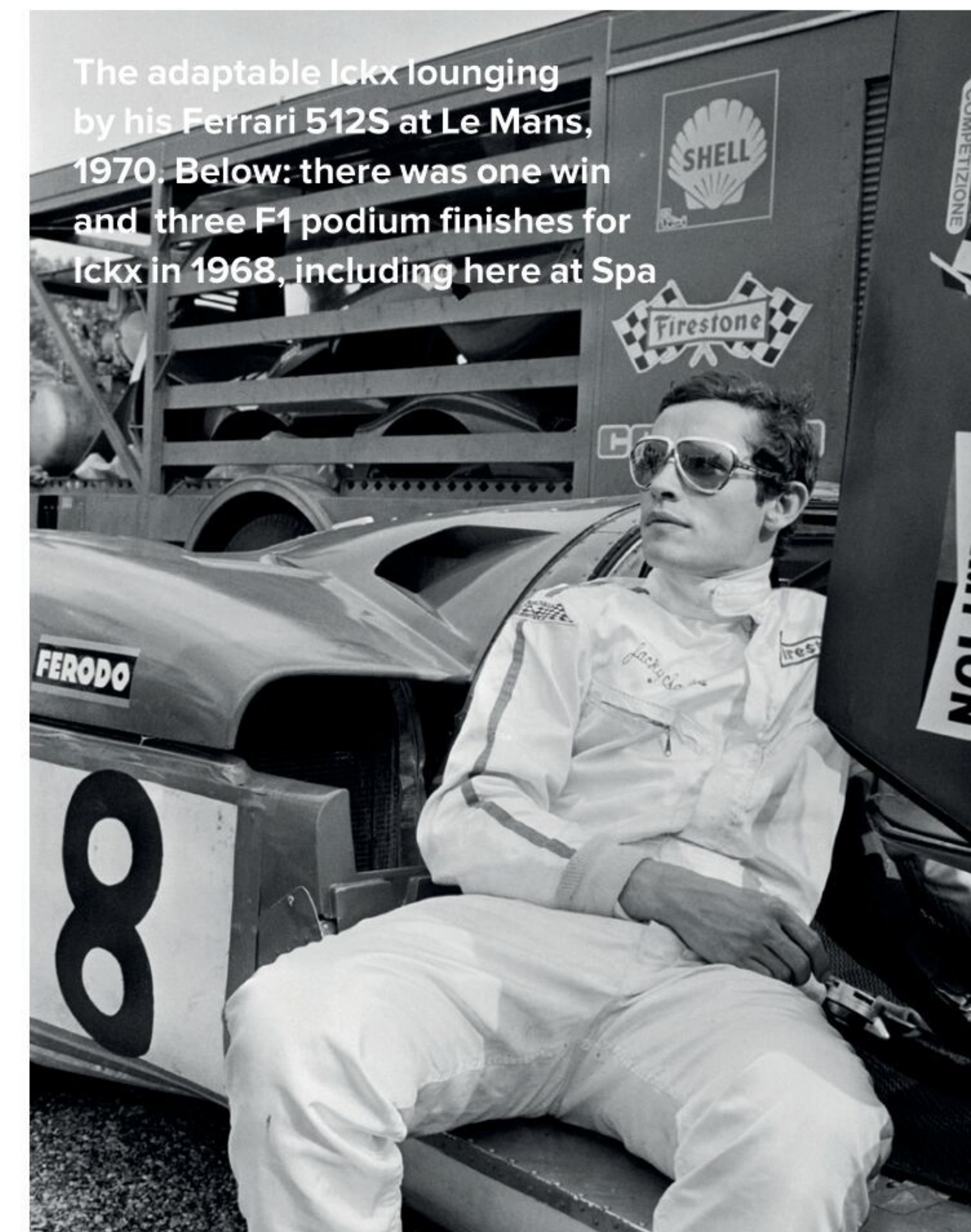
MA: "Yes, for the Americans he's a big name and I watched what he did when I started on the dirt ovals. He was the king, the one to beat and he didn't like it when I beat him. Our rivalry was pretty intense on and off the track. He won Le Mans with Dan Gurney in the Ford GT40, and the Indy 500 four times, so yeah, he has his place in history."

RW: "Do we include Jimmy Clark, Jackie?"

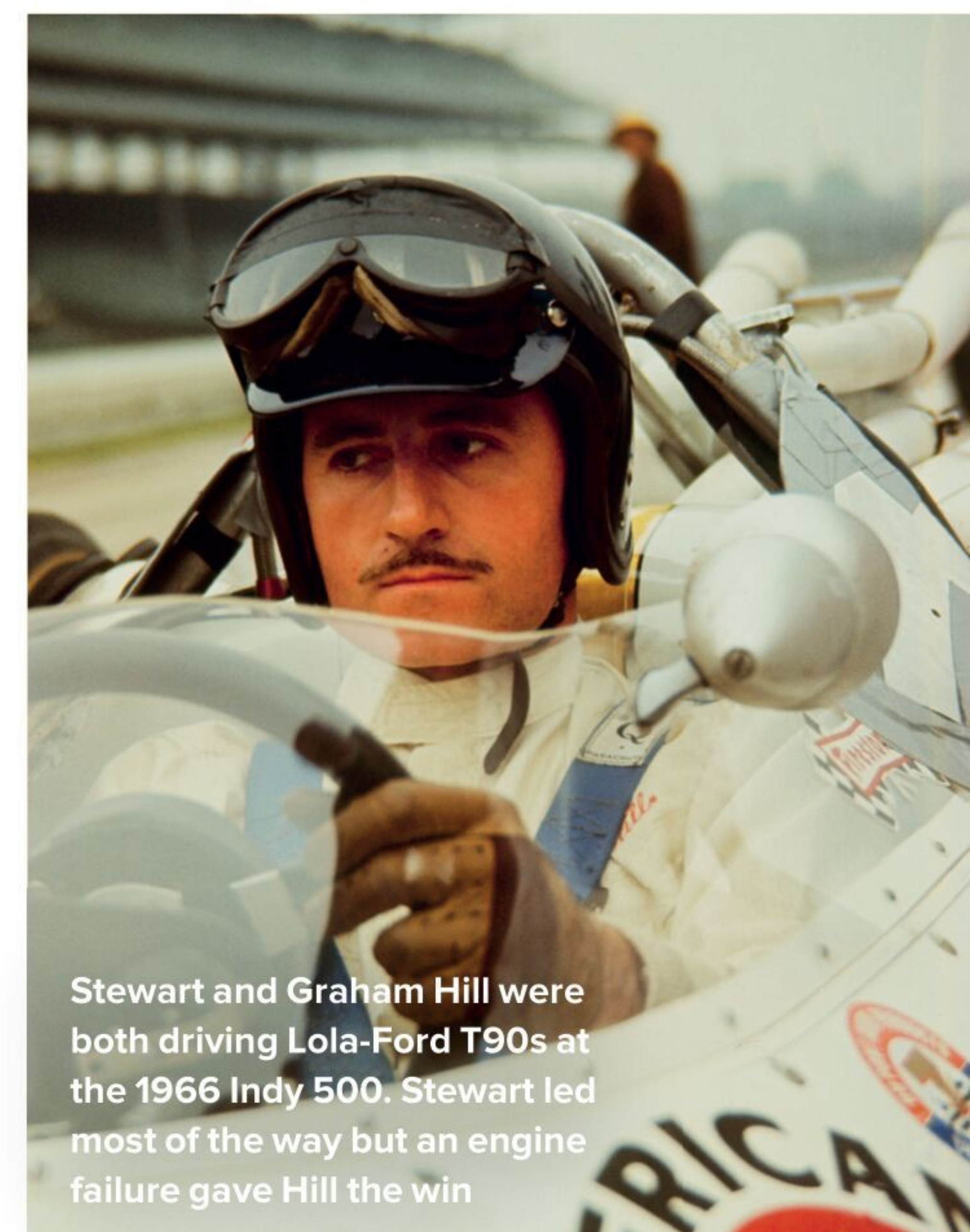
JS: "Yes we do. I learnt so much from Jimmy when I arrived in Formula 1. He was already there before me and was simply the best. He was what I call a truly classical driver, so smooth, so natural. You could always trust him on the track and he was another with that versatility, winning in different cars on the same day. I share the Goodwood lap record with Jimmy, from the last Formula 1 race there, so that's nice for me."

MA: "And we have to include Graham Hill. He's in the top bracket no question. Still the only guy to win the Indy 500, Le Mans and the World Championship. He was so good at Indy, especially with the Lotus turbine car, and remember, the whole thing was so foreign to him at the time. He did everything in a very quiet way. That was typical Graham. His record is stellar and enviable. Look at how many times he won in Monaco. He certainly belongs right at the top and definitely comes into these great

"Graham Hill is in the top bracket, without question"

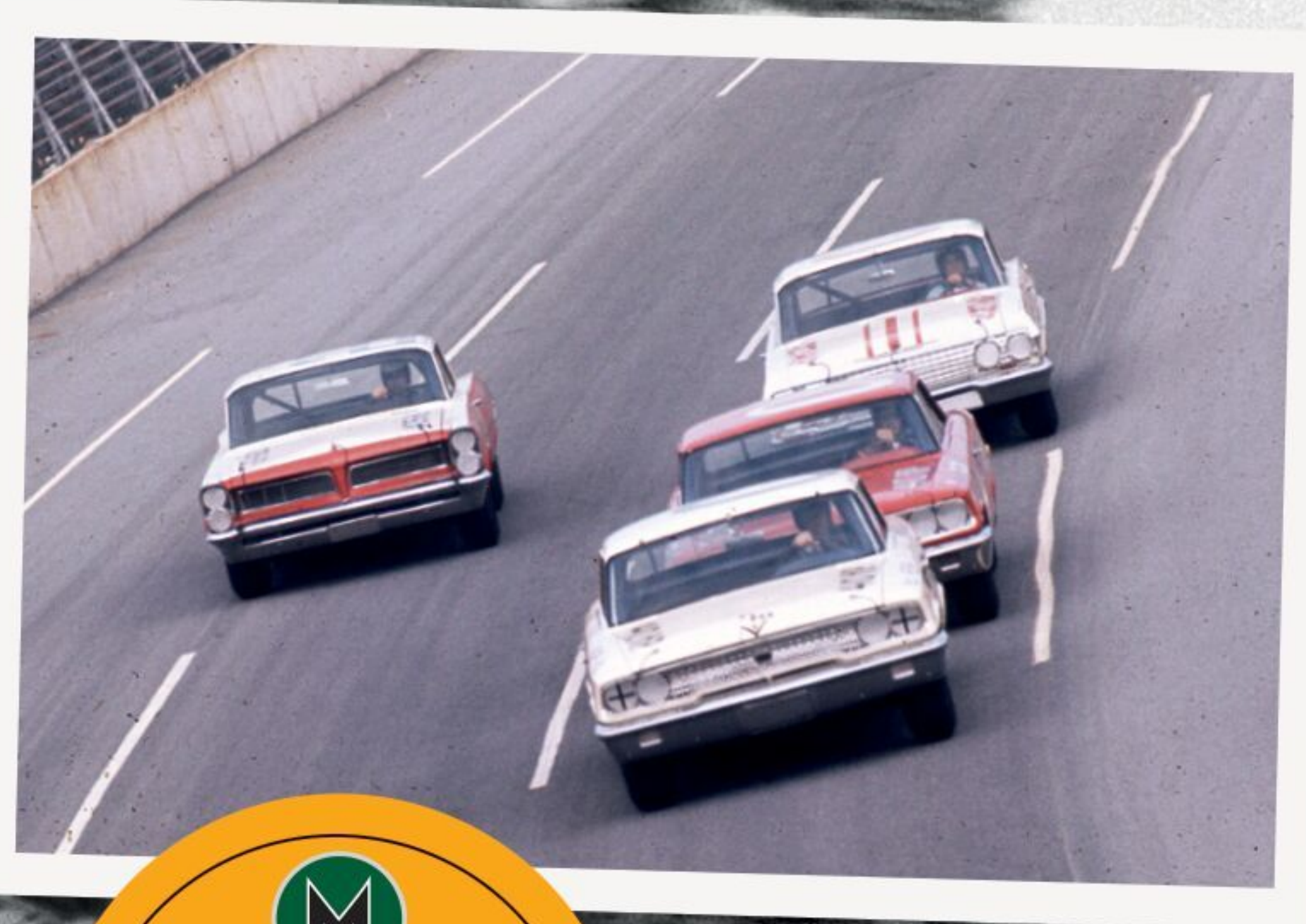


The adaptable Ickx lounging by his Ferrari 512S at Le Mans, 1970. Below: there was one win and three F1 podium finishes for Ickx in 1968, including here at Spa



Stewart and Graham Hill were both driving Lola-Ford T90s at the 1966 Indy 500. Stewart led most of the way but an engine failure gave Hill the win

ANDRETTI & STEWART



The sole world championship F1 victory for the Eagle-Weslake T1G came at Spa in 1967 with Dan Gurney at the wheel. Left: Gurney in 1967 – “an ambassador”. Above: Gurney leads the bottom groove in the Daytona 500, 1963

all-rounders we are discussing - a winner in so many categories.”

RW: “And Dan Gurney?”

MA: “Yeah, Dan deserves a lot of credit for what he achieved. He won in Formula 1, at Indy, in Can-Am and in stock cars so he mastered all these different disciplines. We all had different opportunities at different times. I have a tough time judging other people. Sometimes it can be unfair, and I leave these judgements to the experts. A champion of yesterday would be a champion of today. These drivers extract the maximum from what they are given to race. It’s always that human element even though nowadays they have it easier with the computers, you can’t over-rev on a downshift, they have so much data. You can analyse forever who’s better than another but it’s never cut and dried.”

JS: “Coming back to Dan Gurney, I always liked him as a man. He was a great ambassador for the United States, very sophisticated and carried the flag for America in a very dignified fashion. He didn’t have the success that you had Mario, but he won a lot of races, created his own racing team, won a grand prix in the Eagle they designed and built.”

MA: “You know, every decade is different, more drivers specialise now because of their contracts. But I tell you, none of my contracts allowed me to race in other categories but I was going to do it anyway. I remember that I was testing with Lotus at Silverstone on a Wednesday, there was no grand prix that weekend, so I went back to America and raced for Roger Penske. Colin said, ‘You can’t do that.’ But nobody was ever going to own me 100% so I did what I wanted as long as it never interfered with my main objective

at the time. My free time was always my own, end of story.”

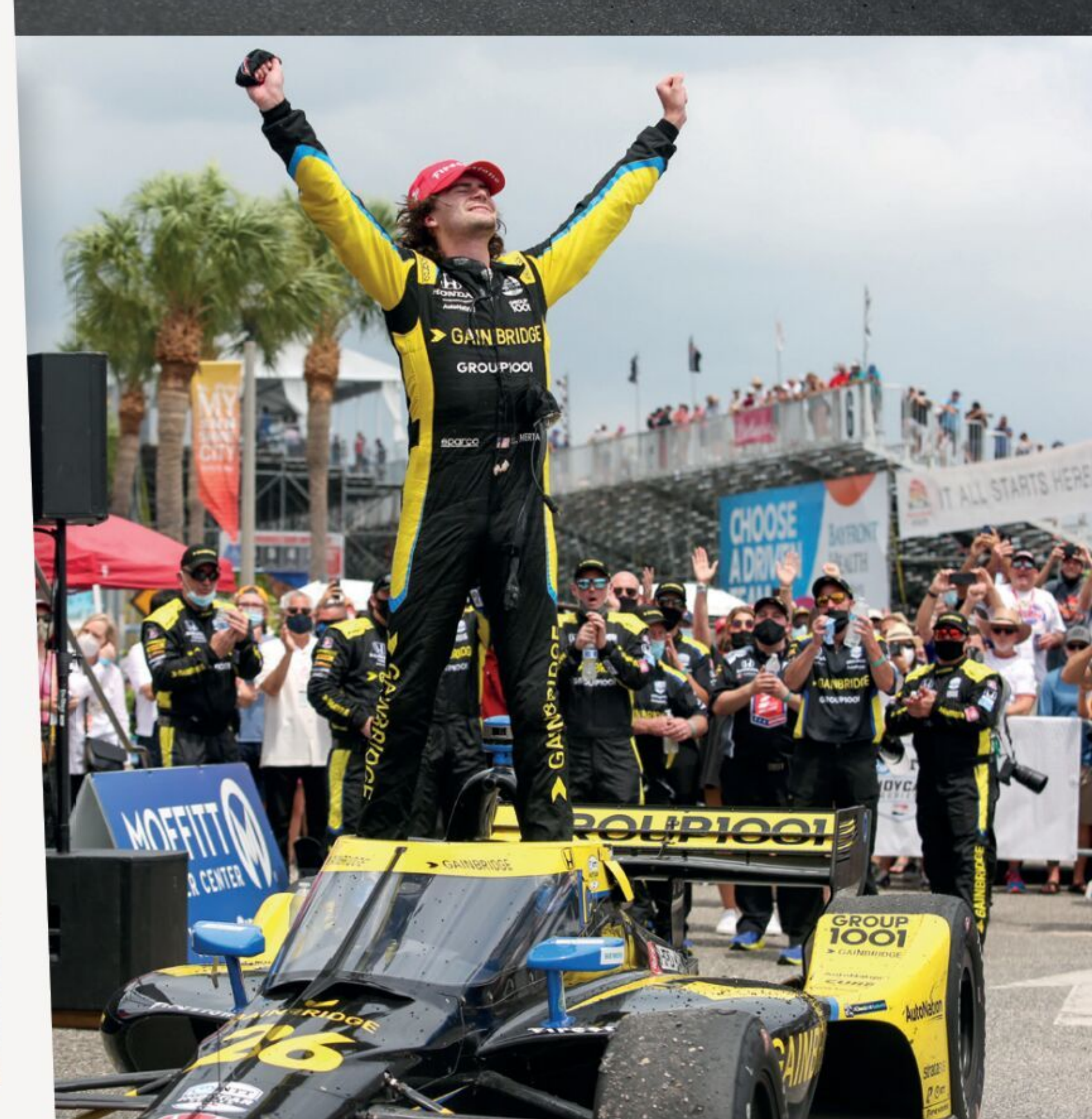
JS: “That’s what made you who you are Mario, and how you did all those things.”

RW: “Should we include Fernando Alonso? Mario, he drove for your son Michael’s team so you saw him close up.”

MA: “Fernando wanted to come to Indy and beat the guys at their own game, not just get a feel for that type of racing. You have to have that mindset to have a chance of winning and we know he’s a winner, twice world champion, twice a Le Mans winner with Toyota. He didn’t have any trouble adjusting to the oval but he needed a good team, good equipment, and of course I think Michael’s team is one of the best in the business. It was totally foreign for him because of the oval factor.



Fernando Alonso driving for Andretti Autosport at the 2017 Indy 500. Below left: in 2020, Alonso made his Dakar debut. Below right: look out for IndyCar star Colton Herta



“Alonso showed the value of expanding into other disciplines”

“I was there when he had his first experience on the track. My grandson Marco had set up the car to make sure it had good speed, so Fernando had the confidence to go out and work up to the right level. He’s a quality driver and he did himself proud. In the race he was a force to be reckoned with, and then, lo and behold, the Honda engine let him down when he was potentially in a position to win it.

“He’s another one who showed the value of expanding into other disciplines, not just to be there, but to be competitive, to win. You can tell him - the one thing that’s missing now is NASCAR. He needs to try a NASCAR.

In today’s world, where specialising in one category is very much the thing, I have a lot of respect for him for venturing away from Formula 1. For me, it was a breath of fresh air to see Fernando sacrifice a couple of years of Formula 1, come to Indy, and do it well.

“He was always going to be a force to be reckoned with wherever he went, his reputation getting him the best equipment, and you need that. It’s been great for the sport, great for him, and I love the fact that he wanted to go for it.”

JS: “Yes, Alonso is right up there, no question. He could and should have won

more championships. He’s been one of the best in F1 over recent years. The endurance wins and the performance at his first Indy 500 just prove his versatility and the talent that we’ve been talking about today.”

MA: “Yeah, agreed, and while we’re on recent or current drivers we have Colton Herta winning in IndyCar for Michael’s team and he has great potential for a move to Formula 1. He raced alongside Lando Norris when he was in Europe as a youngster and I think Lando would speak highly of Colton. He has tremendous outright speed, he’s very composed and calm under pressure and doesn’t put a wheel wrong. He’s won these races not on strategy but on pure speed and I think he has a lot to offer. I know he’d like a shot at Formula 1.”

And who said all-rounders were a thing of the past... 

MASTERS



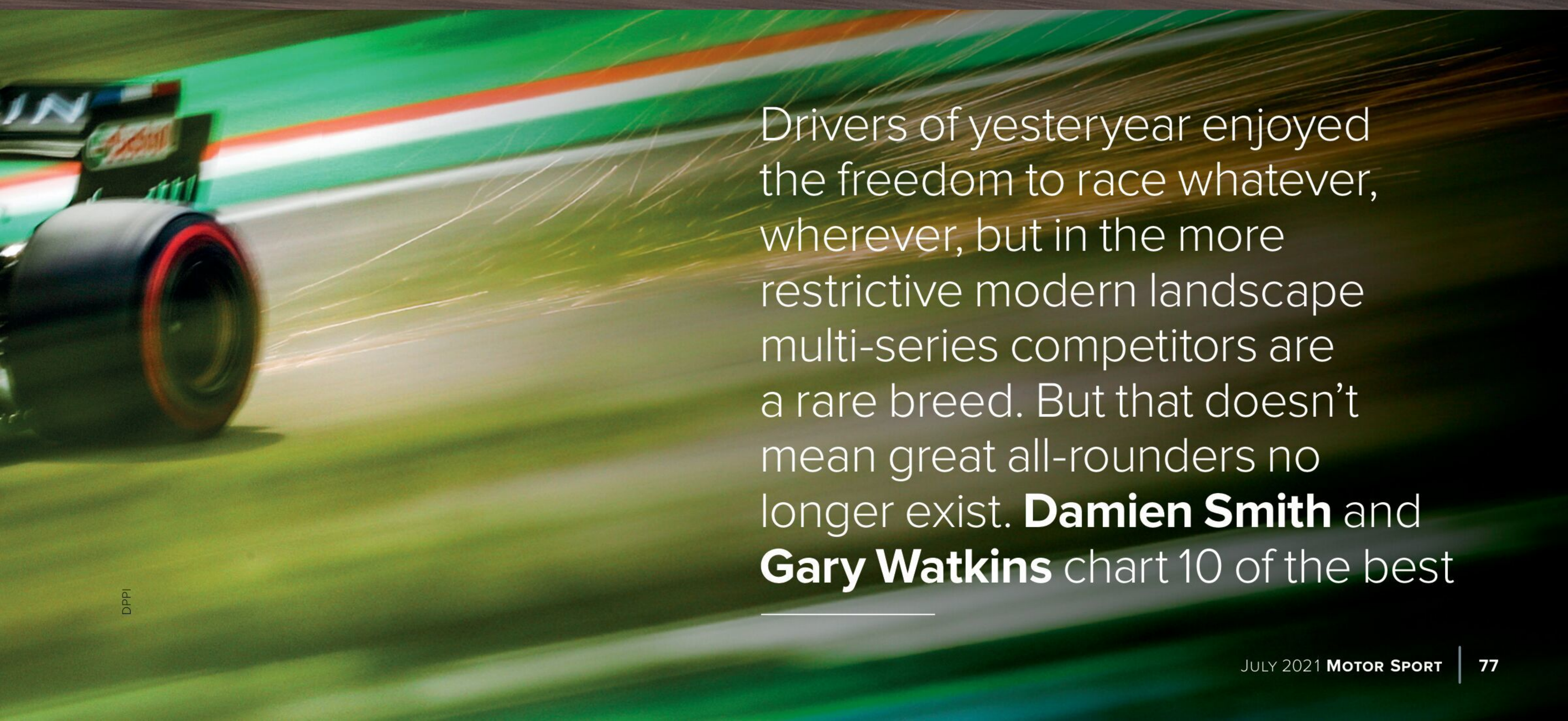
OF

THE



MANY





Drivers of yesteryear enjoyed the freedom to race whatever, wherever, but in the more restrictive modern landscape multi-series competitors are a rare breed. But that doesn't mean great all-rounders no longer exist. **Damien Smith** and **Gary Watkins** chart 10 of the best



The days of drivers racing saloons, GTs and single-seaters all in one afternoon are the preserve of a few historic racing specialists today, but to dismiss the notion that all-rounders still thrive in the contemporary sport would be an oversight. Code switchers are still plentiful, whether they have popped out the other side of Formula 1 or bounced off its glass ceiling having only grazed the underside. When they widen their horizons, they often find new or greater fulfilment as they prolong or establish their place among the privileged few: to live the life of a paid professional racing driver. Lest we forget, you have to be special to earn money to race at any level and it's this achievement by which racing drivers' careers should perhaps be judged above and beyond whether they managed to scratch a handful of grand prix starts for a middling-at-best F1 team.

Motor Sport has long saluted the diversity of the greatest racing lives, from Sir Stirling Moss to Vic Elford, Graham Hill to Brian Redman and indeed, Jackie Stewart to Mario Andretti. Time then to doff our cap to those in the era of the specialist, who keep alive the fine tradition of the talented, versatile racing all-rounder.



This season, López is sharing WEC driving duties of the Toyota GR010 Hybrid with Mike Conway and Kamui Kobayashi

10

José Maria López

*Touring cars,
LMPI/Hypercar*

Fernando Alonso beat José Maria López to the punch in becoming the first two-discipline FIA world champion on the circuits.

But when the Argentinian emulated his former Toyota team-mate by adding the World Endurance Championship crown in 2019/20 to his World Touring Car Championship hat-trick of 2014-16 with Citroën, his was arguably the bigger achievement.

His titles came in a production-based, front-wheel-drive tin-tops and then a four-wheel-drive jet fighter of a prototype. It would be wrong to say that López made a seamless transition between disciplines. There were mistakes in his maiden season in the WEC after he switched codes for 2017, but they were quickly banished from his repertoire and he became an important player in a line-up with Kamui Kobayashi and Mike Conway that could — and perhaps even should — have beaten Alonso, Sébastien Buemi and Kazuki Nakajima to the 2018/19 WEC crown. They most definitely were the moral winners of the second of the two editions of Le Mans incorporated into the so-called 'superseason'.



9 Jean-Éric Vergne

F1, Formula E, LMP2

Fifty-eight F1 starts over three seasons for Toro Rosso represents a better F1 shot than most of his peers achieved. Should he have made more of it? Probably. Was he also unlucky to drop off the F1 map? Almost certainly. The 31-year-old Frenchman is a prime example of a driver who successfully re-invented himself and is now reaping the benefits. Formula E has proven a life-raft for such careers and Vergne has thrived on the series' buoyancy. Only Lucas di Grassi has won more Formula E races. A consecutive two-time champion in 2017/18 and 2018/19, Vergne has also used LMP2 drives as a launchpad to what could be a sports car career: next year he'll be a factory Peugeot Hypercar driver for its return to Le Mans and the WEC. He's in his prime.



8 Sam Bird

Formula E, GT, LMP2

The finest of Britain's new generation of racing all-rounders? We reckon so, based on his record in Formula E and prolific endurance racing experience first across LMP2, in which he helped carry G-Drive to a world title in 2015, and then as a core member of AF Corse's Ferrari GTE squad. The 34-year-old is among those who bounced off that F1 glass ceiling, but saw the opportunity Formula E represented. He transferred to Jaguar this year and maintained his record for winning a race in each season of the EV series. If he lacks the Formula E title, Bird is renowned for his competitiveness. The former Mercedes F1 test driver still has time to land a plum drive in the new Hypercar era while leading Jaguar's FE charge. He looks the part in Ferrari red.

GETTY IMAGES, JOÃO FILIPE/DPIPI



Versatile German René Rast has a long-standing association with Audi – which might stretch to Hypercars

René Rast

DTM, Formula E

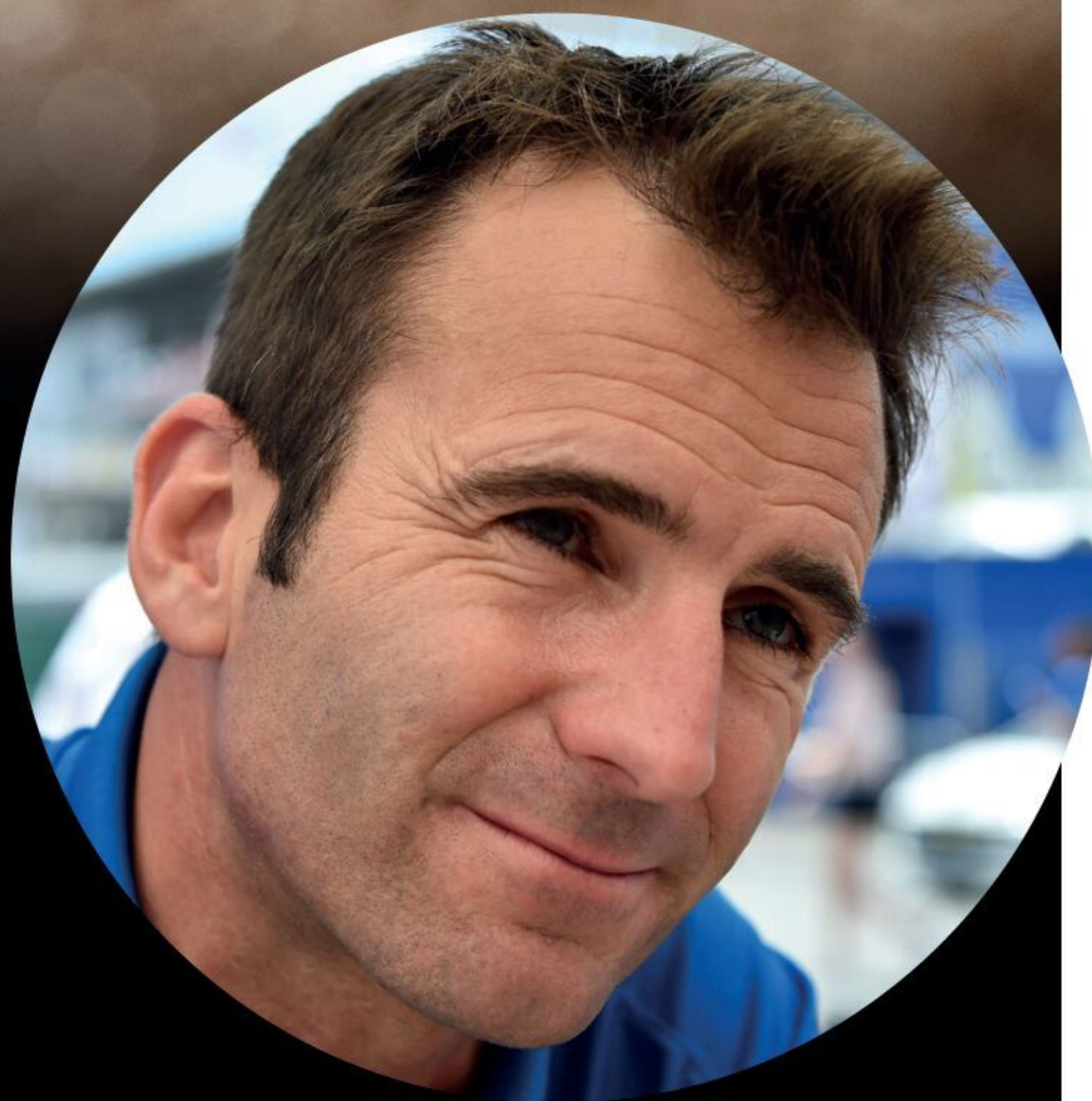
To understand why Rast is considered among the best and most versatile modern all-rounders, listen to what his Abt Audi team boss Allan McNish has to say of the new Formula E convert. "René is extremely analytical," says the Scot. "He will sit there and look at his own performance to the nth detail. He looks at how he interacts with the car, not how the car interacts with him. Then he will adapt and mould."

Rast's three consecutive Porsche Supercup titles were the foundation of his fine GT career, but it was his transformation into the king of the DTM that cements his place on this list. Three consecutive titles in Europe's highest-profile tin-top series has led him to a surprise single-seater switch and he's already a Formula E podium finisher. With Audi withdrawing its works interest in the EV series, the 34-year-old might now have his eyes on the German giant's return to Le Mans in 2023. Transferring his talents shouldn't be a problem. ▶

In a flawless run in 2018, Dumas became the first driver to reach the Pikes Peak clouds in less than 8min (7min 57.148sec)



6



Romain Dumas

LMP1, GT, EV records, rallying

Dumas is one of those sports car pros who looks equally at home in a prototype as he does in a GT car. Or should that be vice versa? The Frenchman can swap seamlessly between the two. A month and a half after taking Le Mans victory (his first) aboard an Audi LMP1 in 2010, he notched up another 24-hour win at Spa (his second) driving a Porsche GT2.

Dumas has gone on to prove that versatility on rally stages and hillclimbs: he was the 2017 FIA R-GT Cup rally champion at the wheel of a self-entered Porsche 911 GT3 RS and remains the course record holder at the Pikes Peak hillclimb at the wheel of Volkswagen's ID.R and on Goodwood's hill too. The all-electric machine is based around a car Dumas developed himself for his initial attempts on the Colorado course that yielded a trio of victories. Dumas' love of motor sport knows no bounds and he isn't afraid to push the boat out as he seeks a new thrill.

Honourable mentions

Sébastien Buemi

Jettisoned out of F1, but has thrived with a dual career: Formula E champion in 2015/16 and a lynchpin of Toyota's endurance racing campaigns, becoming a two-time WEC champion and three-time Le Mans winner.

Jenson Button

After nearly 20 years of F1, has dived into the wider racing world: Super GT champion in 2019, a Le Mans start, GTs, adventure on the Baja 1000 and now a team owner/driver in Extreme E.

Nicky Catsburg

A tin-top race winner in WTCC and WTCR and a GT specialist. Won Spa 24 Hours in 2015, the Nürburgring 24 Hours last year and this year scored a Daytona 24 Hours class win in a Corvette C8 R.

Emmanuel Collard

Now 50, has notched up 24 Le Mans starts in a wide assortment of GTs and prototypes – and still a contender today, winning the GTE Am WEC title last year.

António Félix da Costa

Once a highly-rated Red Bull junior, missed F1 but became a DTM race winner and is now the Formula E champion and an LMP2 frontrunner.

Scott Dixon

Six-time IndyCar champion with Chip Ganassi, with whom he scored two overall Daytona 24 Hours wins and a class victory in its Ford GT. Added a third Daytona win last year in Wayne Taylor Racing's Cadillac.

Mattias Ekström

A Swedish Touring Car champion and double DTM champion, Ekström switched to rallying, becoming world champion in 2016. Now racing in Extreme E.

Robin Frijns

Race winner in Formula E with Envision Virgin. GT CV includes a Bathurst 12 Hours win, finished third for Audi in DTM last year and this year combines Formula E with a WEC LMP2 drive for WRT.

Nico Hülkenberg

Makes this list for his cameo at Le Mans for Porsche in 2015 while he was still a Force India F1 driver. That hadn't happened since Johnny Herbert won at Le Mans in 1991, a week after racing in the Mexican GP.

Robert Kubica

Suffered terrible hand and arm injuries while rallying in 2011 during his F1 career. Since, has won a WRC2 title, made a remarkable F1 return with Williams, has also raced in the DTM and is now an ELMS race winner in LMP2.

Alex Lynn

Races for Mahindra in Formula E, also due to appear for United Autosports in LMP2 at Le Mans this August. Won the GTE Pro class at Le Mans last year with Aston Martin.

Scott McLaughlin

Kiwi sensation who is a consecutive three-time Australian V8 Supercars champion and Bathurst winner with Penske, which has now switched him to a full-time assault on IndyCars.

Simon Pagenaud

American Le Mans Series champion in 2010, second at Le Mans for Peugeot, then an Indy 500 and IndyCar champion for Penske.

Kimi Räikkönen

A nod for his two seasons in WRC and NASCAR flirtation mid F1 career in 2010-11.

Stéphane Sarrazin

He made one GP start, rallied extensively and raced for Peugeot at Le Mans. Still going at 45 in Extreme E.

Alexander Sims

Lynn's team-mate in Formula E. Also continues to race GTs for Corvette in IMSA and has wins in both the Spa and Nürburgring 24 Hours.

Petter Solberg

The 2003 WRC champion proved a hit when he switched to rallying, becoming a two-time world champion in 2014 and '15.

Harry Tincknell

Combines racing for Mazda in IMSA and in TF Sport's LMP2 squad in the ELMS. Has two Le Mans class wins.

Stoffel Vandoorne

Has diversified since being dropped by McLaren in F1. Now a Formula E frontrunner with Mercedes EQ and also racing in the WEC in LMP2 with Jota Sport.

Nyck de Vries

The 2019 F2 champion is team-mate to Vandoorne in Formula E and races in the ELMS for G-Drive in LMP2.



5 **André Lotterer** *Super Formula, Super GT, LMPI, Formula E, F1*

When André Lotterer was in his sports car pomp he spent the weekends off from his WEC commitments racking up victories at the wheel of single-seaters in Japan. He bolstered a CV that includes three Le Mans victories and a WEC title with 16 wins in Formula Nippon and then Super Formula during his years as an LMP1 racer with Audi and Porsche in 2010-17. He won the title in 2011, too, and would have claimed another had he not been forced to miss two events and three races in '13. If there were any doubts over his versatility, he proved it when he got a late call to make his F1 debut with Caterham at Spa in 2014 and outqualified team regular Marcus Ericsson by a second. A new chapter of the German's career in Formula E has yielded multiple podiums.



4 **Sébastien Bourdais** *IndyCar, IMSA, LMPI, F1, GT, Australian V8s*

Underachievement when he made it to F1 with Toro Rosso in 2008 shouldn't detract from Bourdais' credentials. The Frenchman has dovetailed his exploits in North American single-seaters with a successful sports car career aboard a range of machinery. To his name he has a pair of outright victories in the Daytona 24 Hours and one each in the Sebring 12 Hours and Spa's twice-around-the-clock classic. He finally got to stand atop the podium at Le Mans in GTE Pro in 2016 with the Ganassi Ford squad, having had to look up to the winners from the second step in three of his four attempts at overall victory with Peugeot. To prove his versatility, he's twice triumphed on one of the Aussie V8 Supercar enduros on the Surfers Paradise Street Circuit.



3 **Juan Pablo Montoya** *F1, NASCAR, IndyCar, IMSA, LMP2*

Belligerent to the point of arrogance, Montoya is the most soulful driver of the past 25 years. When F1 kept him waiting he conquered CART and the Indy 500. Then, when he finally landed the Williams job he deserved in 2001, Montoya shot down the inside of Schumacher at Interlagos – and blew the roof off F1. If only he'd stuck around longer.

The NASCAR years were a contradiction, on one hand wasting what he had to offer and on the other enhancing his devil-may-care legend. That he also proved adept in US sports car racing, winning the Daytona 24 Hours with Chip Ganassi Racing three times and becoming IMSA champion with Penske as recently as 2019, should never be overlooked. Then there was that second Indy 500 win, 15 years after the first. How can you not love him?



2 **Sébastien Loeb** *WRC, LMPI, touring cars, GT*

The greatest rally driver in history, Loeb was a shoo-in to figure high on this list. But why isn't he No1? After all, beyond his astonishing run of nine consecutive WRC titles and record 79 wins, he finished second at Le Mans for Pescarolo in 2006, won FIA GT races in a McLaren GT3, proved his tin-top chops in Citroën's dominant World Touring Car Championship campaigns, held his own in World Rallycross, is a 14-time Dakar Rally stage winner and races on today in Lewis Hamilton's Extreme E team – while still not being able to leave the WRC alone at the age of 47. He even tested a Toro Rosso capably enough for an F1 cameo to briefly become a consideration.

By the time he broke through, top rally drivers had long since shed their tendencies to specialise either on the loose or the hard stuff to have the capability to deliver on any surface, but Loeb took that versatility to new levels. Few could live with him, whatever was under his wheels. It also doesn't hurt that Loeb exudes a natural charisma hewn from a solid core of steel that would have made him a perfect fit in any discipline from any previous era. He's a hero the like of which we might never see again. But he's not our No1... 🏆

Old-school French insouciance and multi-surface success means a podium position for Loeb



An audience with **Jenson Button**

Join *Motor Sport* for an exclusive online Q&A with the 2009 Formula 1 world champion

Thursday, June 17, 2021 via the *Motor Sport* YouTube channel, £9.99

Jenson Button's Formula 1 world title in 2009, driving for the unfancied Brawn GP Team, stands as one of the greatest upsets in the sport's history - a true shock, but one which brought Button a swathe of fans. He was involved in F1 for 17 continuous seasons, a total of 306 races that brought 15 wins and 50 podium finishes. Not bad for a lad who failed his first driving test. His mistake? Nipping between two cars on a narrow

road, a manoeuvre his instructor described as "in racing mode". Little did he know...

We are offering an exclusive opportunity to join a virtual event with Jenson and a *Motor Sport* magazine journalist that will be broadcast on YouTube. As well as watching the interview live, viewers will have the chance to ask their own questions through a chat facility. This is an event not to be missed.

Buy tickets at
motorsportmagazine.com/events/jenson-button-event



Eye on the prize: 20 years after his debut, Alonso is back in F1 after a two-year hiatus. Eighth in Portugal has been his best result this season

1 Fernando Alonso

F1, IMSA, LMPI, Dakar, IndyCar

Fernando Alonso knows, like the rest of us, that 32 GP wins and two world titles is unrepresentative of his undoubted talents. As he edged towards 40, he realised he wasn't going to be breaking any F1 records, so he set out to leave his mark on our sport in a different way. He wanted to become known as one of the great all-rounders, and high on his to-do list was completing the unofficial triple crown of motor sport by adding victory in the Le Mans 24 Hours and the Indy 500 to his 2006 Monaco Grand Prix triumph.

The Spaniard only just fell short of emulating Graham Hill during a three-and-bit year adventure that began during his time with McLaren. Alonso won the Le Mans 24 Hours twice with Toyota in 2018 and '19 and added a third world title to his CV in the WEC with the Japanese marque. In doing so, he

became the first driver to win FIA world crowns on the circuits across different codes


He also won the Daytona 24 Hours in 2019 in what was surely his greatest performance at the wheel of a sports car, and at Indy he was in the hunt for a win on his debut in 2017 before Honda let him down once again. There was an off-road foray, too, in last year's Dakar Rally, once more with Toyota.

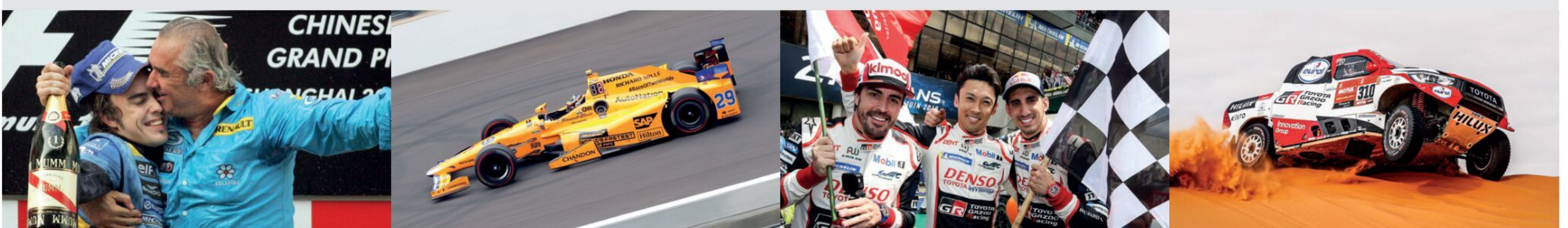
Alonso brought his full armoury to the table in each of the disciplines he tackled. At one end there was a typical diligence of preparation, at the other an opportunism out on track. The way he used every inch of asphalt available to him in the early restarts from behind the safety car during his maiden Le Mans was breathtaking.

It would be simplistic to say that Alonso made the difference in the winning Toyota's comeback from an early delay that year, but he did set it in motion. He clawed back more than half of the two-minute deficit to the sister car during a quadruple stint in the

small hours on Sunday morning. Yet Alonso was almost certainly the deciding factor when he triumphed at Daytona in 2019 with the Wayne Taylor Racing Cadillac squad. There were times when he was spellbinding in the heavy rain that ultimately brought an early halt to proceedings.

It wasn't his first starring performance on US soil. His Indy debut 18 months before aboard an Andretti Autosport-run car liveried in McLaren orange was nothing short of phenomenal. He qualified in the middle of the second row, led 27 laps and was in the hunt when the Honda engine in the back of his Dallara cried enough. There was no repeat of that form on his subsequent appearances at the Brickyard, a non-qualification in 2019 included.

Alonso's efforts to win at Indy are on hold for now after his return to F1 with Alpine, but he went a long way to securing the legacy he craves. His achievements to *Motor Sport's* mind make him the greatest all-rounder of the current era. 



From left: with Renault's Flavio Briatore, Chinese GP 2007; McLaren orange, Indy 500, 2017; Le Mans win, 2019; flaming dunes – Dakar Rally, 2020



KINGS OF THE HILL

This year's Goodwood Festival of Speed is a celebration of those drivers and teams that saw success across the racing disciplines. Expect to be impressed, says **Damien Smith**



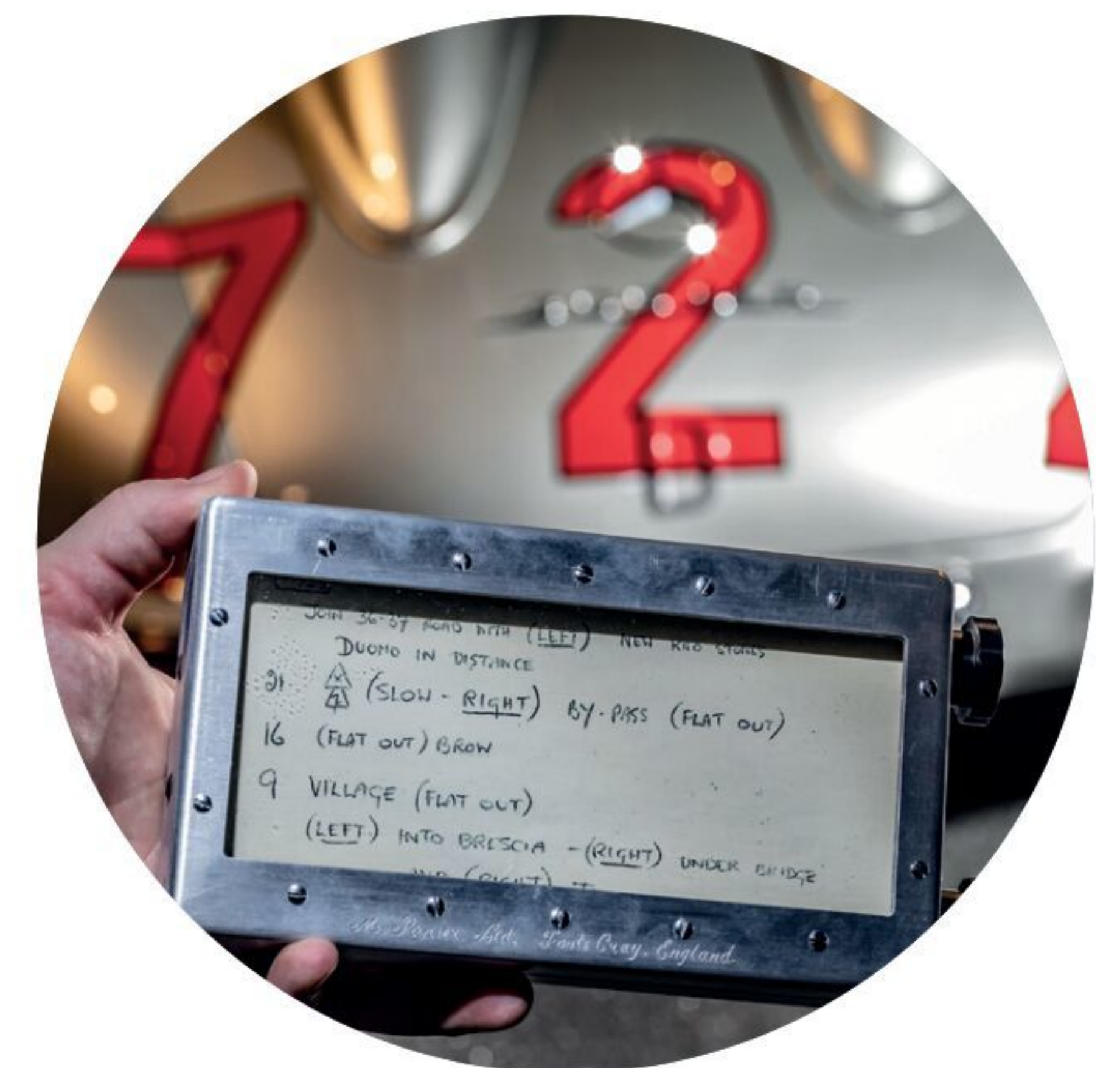
THERE'S TALK THAT WE'RE about to experience the euphoria of a second 'Roaring '20s' as we come blinking back into the post-pandemic light.

For 'our world', the timing of the brakes being released from restrictions couldn't be better: the Goodwood Festival of Speed, back after a painful year away, should return on July 8-11 and could be the perfect occasion to embrace some semblance of normality - at an event that has a history of transporting us to a state that is anything but. Boy, it'll be good to be back in the Duke of Richmond's garden.

REMEMBERING SIR STIRLING MOSS

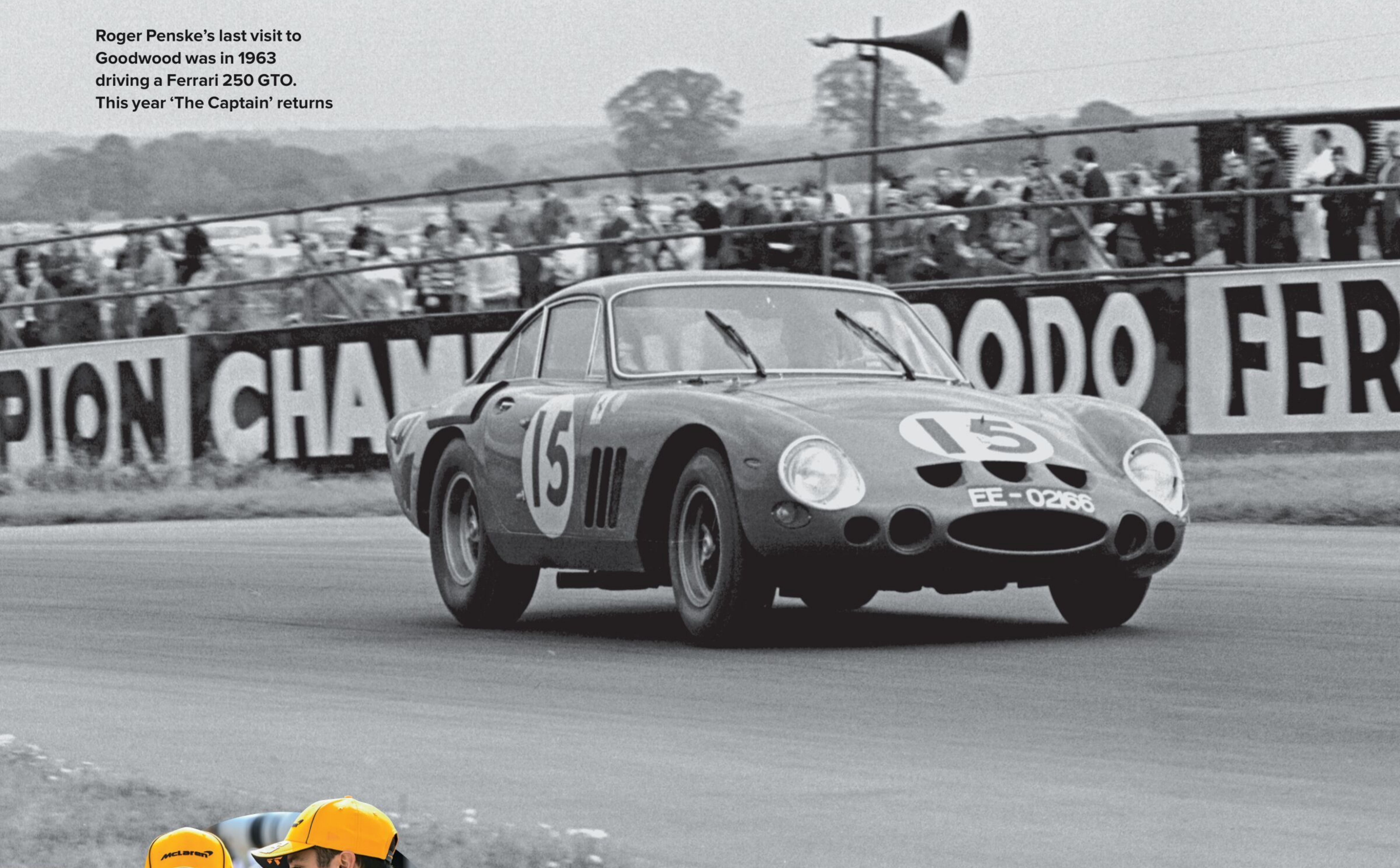
Speaking of boys, the FoS will be the first public occasion where motor sport can properly celebrate the wonderful life of The Boy, Sir Stirling Moss, in the wake of his death last year on April 12 at the age of 90. The enforced delay will likely only heighten the emotion as we finally get to pay our respects and you won't be surprised to read that the Duke and his team are planning to pull out the stops for England's greatest racing hero.

The jewel in the celebration at FoS will be a rare appearance from 300SLR '722', the car in which Stirling and *Motor Sport's* continental correspondent Denis Jenkinson conquered the Mille Miglia in 1955. Mercedes-Benz rarely allows the treasure out of its Stuttgart museum, but it's absolutely right and fitting that the car should journey to Goodwood once more this year to sit in state on resplendent static display - along with Jenks' famous 'bog roll' navigational box, naturally. It might draw the odd passer-by. 🟢



Sir Stirling Moss' Mercedes 300SLR '722' from the 1955 Mille Miglia will be in attendance. Right: Jenks' navigational box

Roger Penske's last visit to Goodwood was in 1963 driving a Ferrari 250 GTO. This year 'The Captain' returns



Further celebrations are inevitably planned for the Revival and Members' Meeting later in the year, with the Stirling Moss Memorial Trophy at the former becoming a permanent fixture. "Stirling and his wife Susie were such an important part of the Goodwood family for so many years," says the Duke. "All of us here felt his loss especially keenly as we weren't able to commemorate his incredible life as we would have liked last year. We hope that fans at our events, and around the world, will join us in celebrating his racing career and bidding farewell to 'Mr Goodwood' in 2021. Stirling's supreme skill and love for his sport will

continue to be remembered at Goodwood for many years to come."

This is Stirling's year, above and beyond anything else at Goodwood. Bring a hanky.

ROGER PENSKE: BACK AFTER 58 YEARS

It's an oddity that, 28 years after the Festival of Speed first graced the now famous 1.6-mile hill, 'The Captain' has never set foot at the event. Roger Penske was last at Goodwood to race at Ferrari 250 GTO in the RAC Tourist Trophy - in 1963. Finally, the Duke has convinced this titan of US motor sport to join him, as guest of honour to mark the 2021 theme: 'The Maestros - motor sport's great all-rounders'. Indubitably, Penske fits that bill, not as a driver but certainly as one of racing's greatest and most influential team owners and patrons.

"I have wonderful memories of racing at Goodwood in 1963 and am honoured to be invited to return this summer," says Penske. "I am very much looking forward to sharing in the celebrations with Goodwood's passionate fans as they return for the 2021 Festival of Speed."

The squadron of Penskes that will join him is suitably impressive. Among the gems will be the four-wheel-drive Lola T152 that was Penske's first entry at the Indy 500 in 1969; the McLaren M16B in which Mark Donohue became RP's first Indy winner in 1972; and the PC23 'Beast', Penske and Ilmor's Mercedes-badged pushrod special that dominated the 500 in Al Unser Jr's hands in 1994.

The 84-year-old Captain himself is down to drive on the hill in the Porsche RS Spyder LMP2 with which Team Penske won the Sebring 12 Hours in 2008. Perfect, given the newly announced alliance with Porsche that will lead both to embark on a new adventure together in the World Endurance Championship and US IMSA series.

"We are incredibly excited that Roger is able to join us at the Festival of Speed this year as we celebrate motor sport's great all-rounders, among whom he undoubtedly numbers," says the Duke. "We are looking forward to seeing both the hugely successful cars which have been assembled, as well as Roger himself take to the Hill over the course of the weekend."

NEWSPRESS, GETTY IMAGES, GLICKENHAUS, McLAREN



Hold your ears: Goodwood belatedly marks BRM's 70th anniversary

BRM'S F1 70th ANNIVERSARY

Affections for British Racing Motors linger strong among the Goodwood (and *Motor Sport*) faithful, and this is one celebration that is likely to prove popular with the hardcore. BRM was founded in the wake of the cessation of World War II in 1945, but this anniversary marks 70 years since its entry into world championship grand prix racing, in 1951. Any excuse!

The collection of BRMs, including all the grand prix winners, will be led by what remains the marque's most famous - and most infamous - model: the 1.5-litre V16-powered Type 15 in which the likes of Juan Manuel Fangio, Moss, José Froilán González and Peter Collins all strived (mostly in vain) to put British Racing Green on the map for the first time in the world championship era. The celebration coincides with the well-publicised plan for marque expert Hall & Hall to build three continuation specials of the V16, from around 20,000 original blueprints and drawings.

NORRIS AND RICCIARDO IN SENNA McLARENS

The appearance of current F1 stars and teams is a signature of the Festival of Speed and at the time of writing, no less than five of the current grand prix entrants will be represented: Ferrari, McLaren, Mercedes-AMG, Red Bull and Williams.

Of the current drivers due to run on the hill, Lando Norris is likely to be a major draw given the 21-year-old's fantastic form this year. He will be joined by his equally effervescent McLaren team-mate Daniel Ricciardo, the pair engaging in a contracted PR commitment that they'd probably agree is a little better than most. Each will get to sample a trio of Ayrton Senna McLarens: the MP4/4, the model that claimed victory in 15 of the 16 rounds in 1988 and in which the Brazilian won his first world title; the MP4/5 from Senna's second title year in 1990; and the MP4/6, his final championship car from 1991 and the last V12-powered grand prix

machine to claim an F1 world title. Norris and Ricciardo are known for their wide smiles, but it's fair to say their faces will be aching more than usual when they get to Goodwood, a week before the British GP.

SOMETHING OLD, SOMETHING NEW

The central display outside Goodwood House will celebrate the history of Lotus this year and as well as the sculpture will include a so-called 'immersive experience'. But while history remains the focal point of the Festival of Speed for many, it's always refreshing to see something brand new. The appearance of the Glickenhaus SCG 007 Le Mans Hypercar sure hits that mark this year.

The new non-hybrid 3.5-litre V8-powered LMH entry wasn't deemed race-ready for the Spa 6 Hours at the start of May, but at the time of writing was due to make the second round of the World Endurance Championship at Portimão on June 13. All being well, patron Jim Glickenhaus has pledged his car for the festival in July, a week before round three of the WEC at Monza and well ahead of its debut at the Covid-delayed Le Mans 24 Hours in August. Among the driving crew for Glickenhaus is one Romain Dumas, Goodwood's hill record holder after his stunning 2019 run in the electric Volkswagen ID.R. Somehow we think it's unlikely Glickenhaus will be encouraging any such attempts with his precious 007. But it speaks volumes for the power of Goodwood that a new racing car with everything still to prove will be showcased at the festival, along with the road-going SCG 004S that will stand out in the Michelin Supercar Paddock.

Oh, how we've missed Goodwood. Hell, how we've missed everything! But having lost it in the midst of a global crisis perhaps there'll be a revived appreciation for what the Festival of Speed means to us. It's just so great to have it back. 



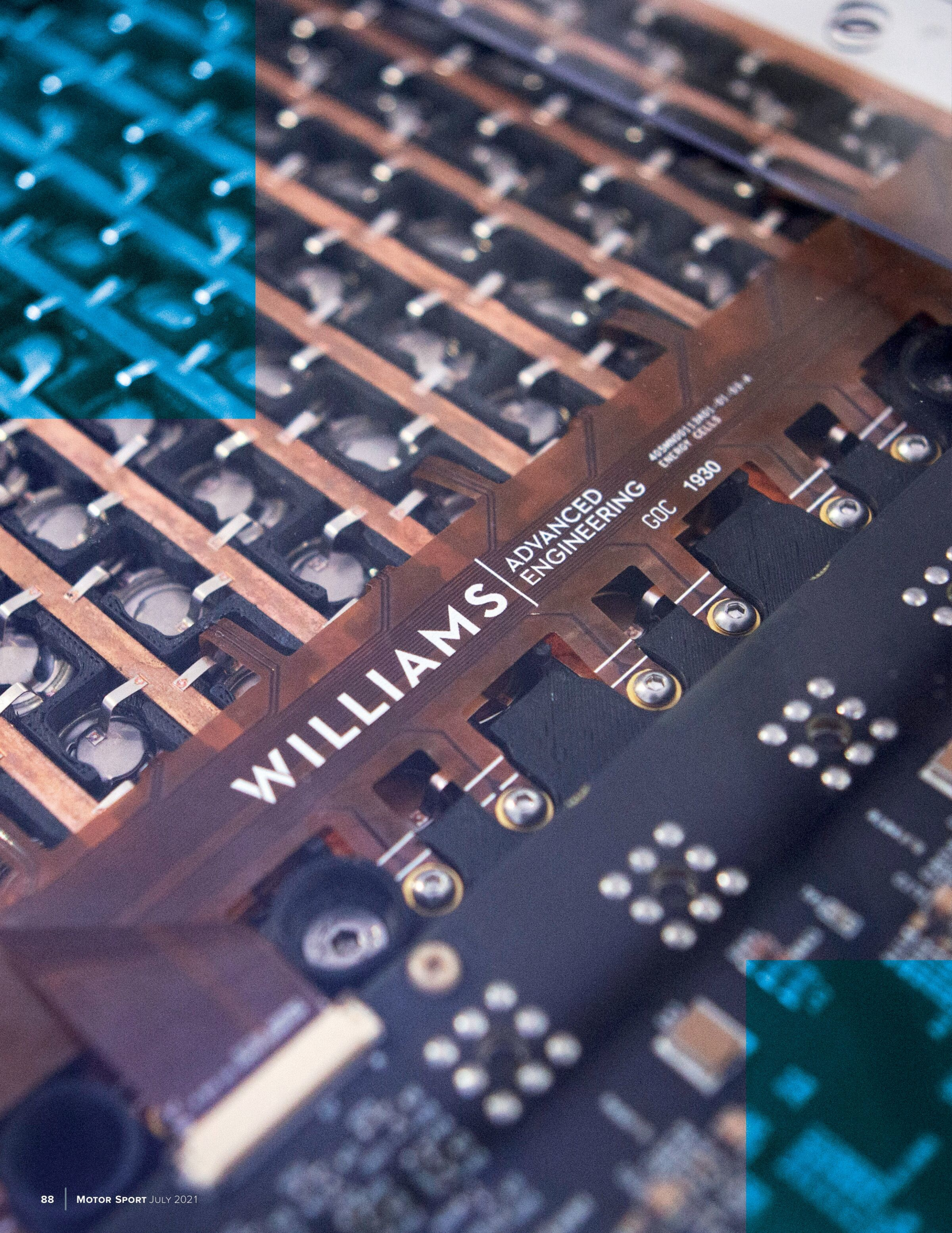
It's fast, but will the Glickenhaus SCG 007 break any records?

Goodwood's ticket guarantee

What will happen should there be a cancellation

All being well and the government's road map to lifting Covid restrictions by June 21 stays true, the Goodwood Festival of Speed really might feel 'normal' this year – although it feels slightly unreal to write that after all we've been through.

Goodwood reports (at the time of writing) that tickets for the FoS and Revival are still available, but that the delayed Members' Meeting is now sold out. The Duke and his team have also made a guarantee in case things don't go to plan. If you buy a ticket and any Goodwood event is cancelled, it can be transferred to next year or you can receive a full refund. For those who bought tickets for the FoS and Revival last year and have rolled them over to 2021, new tickets will be sent out and those dated 2020 won't be valid. But that's not the case for the Members' Meeting. If you have 2020 tickets they will be valid for the event this year, which is scheduled to run in October.



WILLIAMS

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WILLIAMS' CURRENT THINKING



The F1 team is languishing on the grid, but, as **Damien Smith** reports, its Advanced Engineering offshoot is the force behind electric racing – and will power the new LMDh endurance class

The Williams Advanced Engineering facility is a stone's throw from the F1 set-up



THERE'S SOMETHING BINARY about Williams in the modern world. In the unflinching glare of the Formula 1 spotlight, the race team is reduced to a sadly emaciated 'big beast' of the grid, a once-great entity now running around as a backmarker. But widen the circle of light and another Williams emerges - one that not only represents the best of what 21st century motor sport has to offer, but also considered among the greatest rising success stories of the past decade. As Williams Advanced Engineering, the company that Frank Williams and Patrick Head built from scratch in 1977 is in the best form of its life.

Name an innovative new motor sport series, class or category and more often than not the words 'Williams', 'Advanced' and 'Engineering' will pop up in the press release, presentation or news story. The company is seemingly everywhere, thanks to its burgeoning reputation as the go-to specialist in electrification, hybridisation and lightweight engineering. It's not just sparking in the world of cars and racing either. Visit the company's website and you'll find a barrage of projects, from electric mining trucks to collaborations with BAE on battery development to make fast jets more efficient, and even an investment into eco-friendly valve technology for aerosol cans. Thriving barely covers it.

But naturally it's the motor sport projects that catch our eye: WAE will supply the standardised batteries for the new LMDh

endurance sports car class that everyone is talking about; it's energising not only the Extreme E electric off-road series, but also the next-generation Formula E car for the game-changing Gen3 era; and it's also providing the charge for the future of touring car racing, in the form of Pure ETCR. A good time to catch up with the company, then, and discover more about what might well end up being Frank and Patrick's most significant and influential legacy.

First, let's clear up who owns it. WAE was founded in 2010, primarily out of Williams' investment in the original F1 KERS technology when grand prix racing first embraced energy recovery systems. In December 2019, private equity company EMK bought a controlling interest with Williams Grand Prix Engineering maintaining a "significant minority stake" - and when Dorilton Capital bought up the F1 team last autumn, that share in WAE was part of the deal. So the company that started off as an F1 offshoot now exists in its own right,

employing around 350 people, but retains a vital physical, practical and spiritual connection to the grand prix team for which Williams is best known. "We operate very much linked to them," explains WAE technical director Paul McNamara. "Our position on the Grove site next to them is key to our proposition to the world."

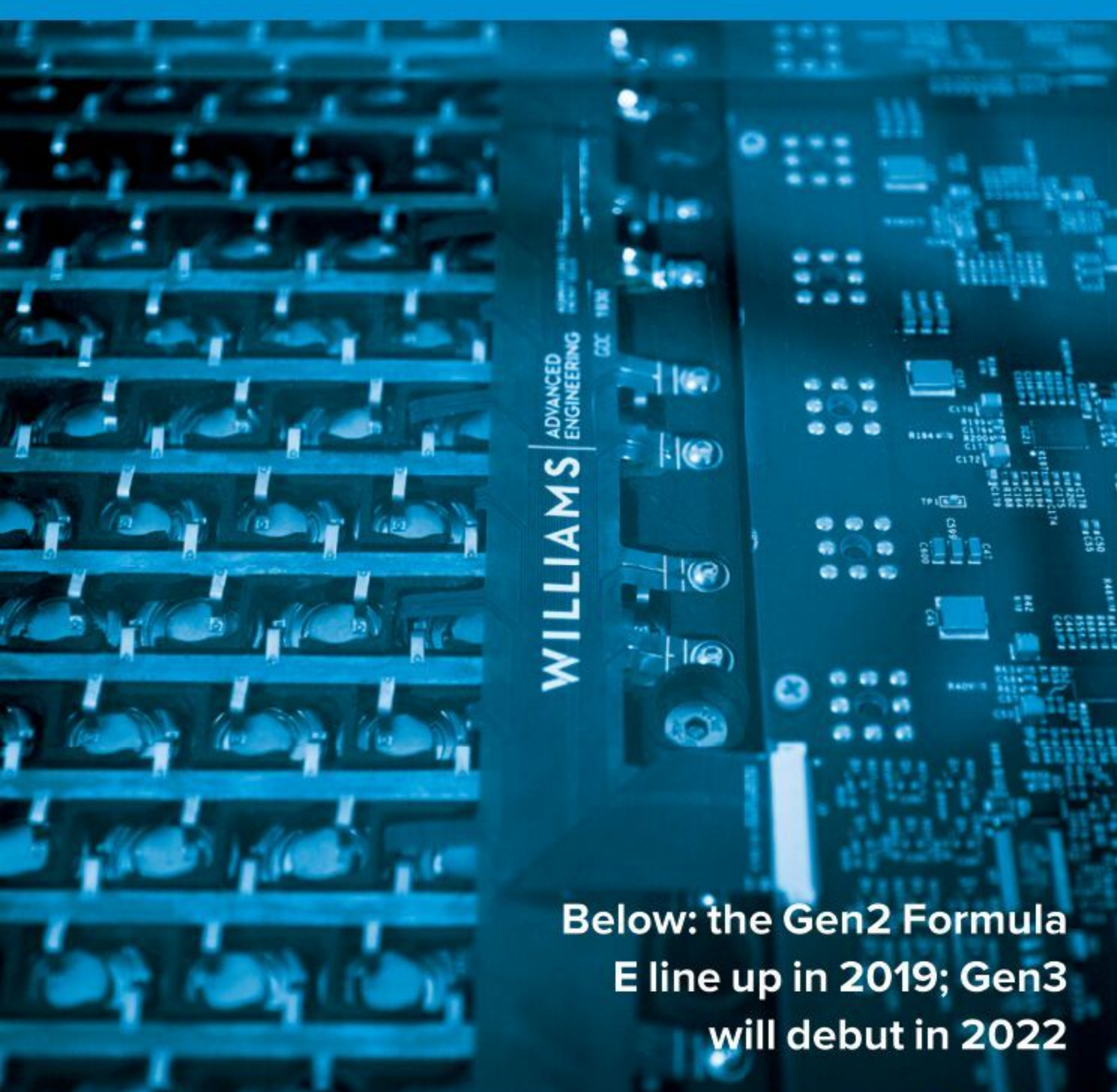
That premier-grade reputation - apparently impervious to Williams' current F1 malaise - has contributed to WAE's emergence as a global leader in motor sport innovation. Doug Campling, chief engineer of WAE's motor sport division, offers some insight into the new projects that are leading its charge.

LMDh: CATCHING THE ZEITGEIST

Le Mans Daytona hybrid: the future is all in the name of endurance sports car racing's new class that promises to unite the European-based World Endurance Championship and IMSA in the US under one rulebook, and run in parallel on equal terms with the Hypercar category that takes its bow this year. LMDh will go live next year and features plenty of standardisation to cap expenditure, including a spec hybrid system producing 50kW (67bhp) for a combined maximum output of 500kW (671bhp). WAE, which previously made the flywheel energy storage system used by Audi in LMP1, is responsible for the battery, DC-DC converter and the bespoke battery management unit, mated to Bosch's hybrid motor and an Xtrac gearbox. Audi, Porsche and Acura are already committed to LMDh for 2023,



Audi's LMDh concept teaser. Right: WAE's LMDh battery



Below: the Gen2 Formula E line up in 2019; Gen3 will debut in 2022



Below: Doug Campling is chief engineer in WAE's motor sport division



Patrick Head, seated, left, and his team at the Grove HQ in 1999. WAE is part of his legacy

"The company that started off as an F1 offshoot now exists in its own right"

and with the promise of customer cars to boost grids for what could be a new golden era of sports car racing, Campling and his team can expect plenty of demand for this one.

"Parity with Hypercar, to ensure LMDh has a fair crack at an overall win at Le Mans and anywhere else where Hypercars might compete, is central," says Campling. "The technical challenge is that it's a true high-power density, lightweight hybrid application, and is analogous to F1 KERS in the early days and now ERS, rather than the electrification model of an energy-dense solution."

We might not see LMDh out on track for a while yet, but Campling reports good progress on development. "The hybrid team, ourselves, Bosch and Xtrac, have been working together very well now for over a year," he says. "Motor sport is a small business and we knew each other anyway. We've been introduced to the

four chassis constructors [Dallara, ORECA, Ligier and Multimatic] more recently, and so far so good. Everyone knows we are trying to start something here and everyone sees the huge opportunity, so at the moment everyone is playing nicely!"

Artificial balance of performance is unavoidable to allow LMDh, which features power fed to the rear axle only in contrast to both on the Hypercars, to be viably competitive. Campling is bullish that BoP will work, as it has in other categories. "The duty cycle with the hybrid system has developed in recent months to ensure there is a baseline performance parity between the two classes," he says. "BoP is something that both IMSA and [Le Mans organiser] the ACO primarily have done a good job on in sports car racing. Le Mans is a sprint race now and the lead cars are often on the same lap after 24 hours, and that's a real success story for BoP. Clearly the people who are paying the most money to develop the car find BoP frustrating because it really does challenge how you spend your money on development. You have to be clever, especially on aerodynamics, to be competitive across the widest operating window: dry, wet, day, night. I'm pretty confident the job that will be done around the BoP is not any cause for concern."

FORMULA E GEN3: EV GAME-CHANGER

Was there some satisfaction when WAE won the business to supply the battery for the Gen3 version of Formula E, we ask Campling

Where we go next...

As car-buying trends shift towards electric, public scepticism towards e-sport might begin to thaw

It's notable that Williams Advanced Engineering technical director Paul McNamara credits F1 for his company's emergence as an electrification pioneer, given the reticence of grand prix racing to fully commit to battery or fuel cell propulsion. "We're fortunate to be involved in something that is a societal mission to decarbonise," he says. "We're in the right place at the right time. In terms of motor sport, WAE owes itself to the vision of F1 back when they first set up KERS, which forced Williams and others to invest in a lot of capacities on batteries, controllers and motors. It forced us to invest in facilities and engineers to do that, which then moved across to this more electric form of motor sport. Without F1 that serendipity wouldn't have happened."

The low energy density of batteries makes full electrification a non-starter for F1, before one even considers that Formula E already exists, not to mention the seismic philosophical and cultural shift that would be required for such a revolution to be accepted. But as governments and the wider automotive industry plough on towards the apparent nirvana of a fully electric future for our road networks, just how much progress is there still to be found in battery fuel cell technology?

"The key challenge for electrification is the storage for a given mass

ratio," says McNamara. "How are we going to improve that? People talk about a limit that's coming, probably 20-25% away from where we are now. But there's other technologies: semi-solid state, solid-state and lithium sulfur that will probably keep that progression going. On a typically good battery pack, maybe 70% is the chemistry, 30% is the other stuff which conventional engineers can nibble away at. But from where we are now, making a 25%, 30% or even 50% improvement on range is a lot."

He points out that fast-charging, a key selling point of Formula E's future, is another area of focus for WAE. "The practicality of electrification is not just how much you can store, but how much you can get in quickly," says McNamara. "Infrastructure, fast charge and how much we can store for a given weight will feed a virtuous situation where we can electrify

most of our on-ground propulsion needs."

What about the alternatives, such as hydrogen, a form of energy that will gain its own class at Le Mans from 2024? "Hydrogen has a place," he acknowledges. "There are certain needs for range extension and hydrogen fuel cells are probably right for that, for example in aircraft. But the good thing about electrification is there's plenty of infrastructure. Every house and street has electricity, we have an established power infrastructure. You talk to generating people and they say they don't have a problem generating the stuff, and it's getting greener all the time. You think back 20 years, we used to worry about heating our houses electrically because we thought it an inefficient way of doing so. Now that has shifted 100%. So I think electrification is the

way rather than changing our gas networks to be full of hydrogen. That's just too hard."

At the same time, McNamara acknowledges and understands the scepticism of full electrification in F1 circles, where synthetic and biofuels are preferred as the best route toward zero emissions – and won't require an uprooting of grand prix racing's fundamental essence.

"All this co-exists for the foreseeable future," he says. "It doesn't make sense for F1 to semi-imitate Formula E. They have to evolve on a parallel path. It has tacked on hybridisation to the internal combustion engine and will follow that journey. There will come some point none of us can predict, likely measurable in decades, when that evolution will take them to something very different – but it is an evolution."

"Then in parallel to that you've got something different with Formula E and now Extreme E, Pure ETCR and so on. They have to go through their own evolution to build their fanbase and bring people with them. That will run in tandem with what is happening in the real world, with people buying more electric cars."



Fill her up: a key challenge to electric is quickening the charge-up time

innocently? “Absolutely,” he fires back with a big grin. While WAE was the supplier for the first generation of Formula E car back in 2014 and has remained involved in the series via its collaboration with Jaguar, McLaren Applied provided the power source for Gen2 - hence Campling’s obvious delight.

Gen3 promises to significantly raise the stakes for Formula E from next year thanks largely to a reported figure of 350kW (around 470bhp) of peak power in qualifying - 100kW up on Gen2. It’s billed as a game-changer for the perception of EV propulsion in motor racing and represents a proper approach to a bespoke EV race car. It has front-axle power regeneration as well as rear for an impressive total of 600kW and fast-charge pitstops. The series hopes that the changes mean the new car can’t be confused any longer with a battery powered Formula 3 car and ensure Formula E is in the vanguard of that development for the future. Campling is reticent about the details: WAE has been sworn to secrecy ahead of Gen 3 appearing in 2022/23.

EXTREME E: OFF-GRID SENSATION

Scepticism about the environmentally focused ethos behind Extreme E is all too easy, but the more we discover about Alejandro Agag’s all-electric off-road concept, the more exciting it looks. Addressing gender equality in the driver line-ups and striving to inform and educate its audience on climate change are laudable ambitions, but it’s the potent performance of the 400kW (550bhp) buggies that will get the heart racing - although at the first round in Saudia Arabia power was cut to 225kW, in part because of high battery temperatures..

As in Formula E, WAE linked up with chassis builder Spark to provide the battery for a short format of off-road racing that has more in common with rallycross than rally raid. A desert event started the series, with rainforest, glacier, arctic and coastal to come.

“As ever with all race batteries, weight was a key constraint,” says Campling. “But for Extreme E it was about robustness and simplicity, and that went into all sorts of decisions. The ability to maintain the battery in extreme environments fed right the way through the mechanical design and into concepts around cooling, conditioning, vehicle installation and maintenance of the pack.

“Extreme E is spectacular. From the manufacturers’ point of view, the fact it is an SUV leans towards the market they are keen to promote. It’s exciting in the places it is going, the story it is telling, the team owners and drivers involved” - Lewis Hamilton, Nico Rosberg and Jenson Button - “and the gender balance in the series is another story. Alejandro has caught the crest of a wave once again.”



Extreme E’s 400kW buggy might even appeal to those psychologically wedded to the internal combustion engine. Bottom: 60mph scooter

“eSkootr racing promises to be spectacular and terrifying in equal measure”

PURE ETCR: THE TIN-TOP FUTURE

That billing is no exaggeration. Created by Marcello Lotti, the force behind TCR, the first electric touring car series is set to spark up this year - even if range constraints again limit Pure ETCR to a rallycross-style short racing format. But there’s nothing short about the performance of these cars, with Hyundai, Cupra and Alfa Romeo (a customer team) committed. The WAE 798V battery pack offers peak power of 500kW (670bhp) and 300kW (more than 400bhp) of continuous power with a 62kWh capacity and can be recharged in less than an hour from 10% to 90% at 60kWh. A five-round series is due to kick off at Vallelunga on June 18-20.

“This really had to be cost-effective,” says Campling. “The whole essence of TCR has been incredibly successful, there are over 400 of them worldwide and that’s based around affordability

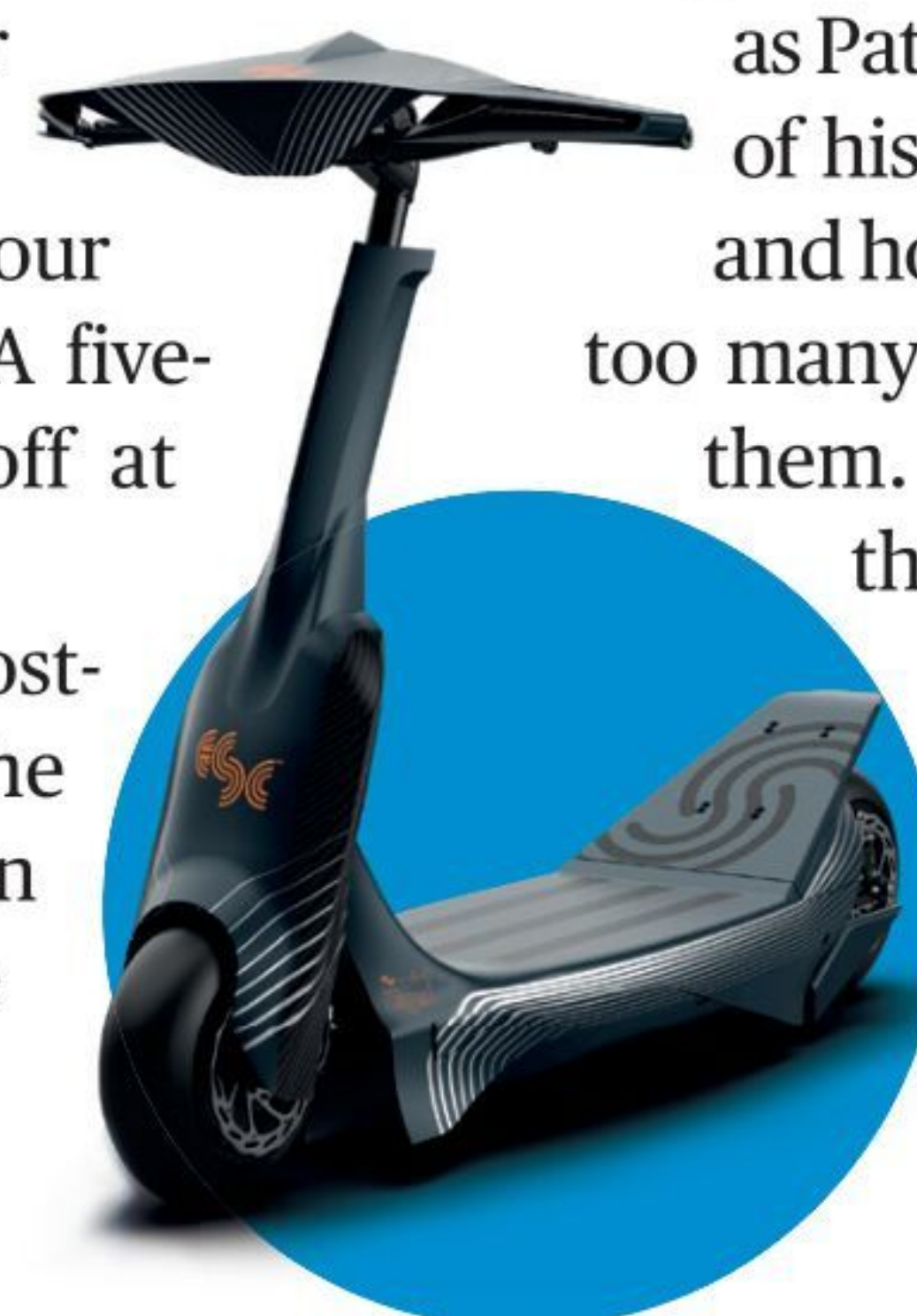
and accessibility. So cost was the biggest driver in terms of cell selection.

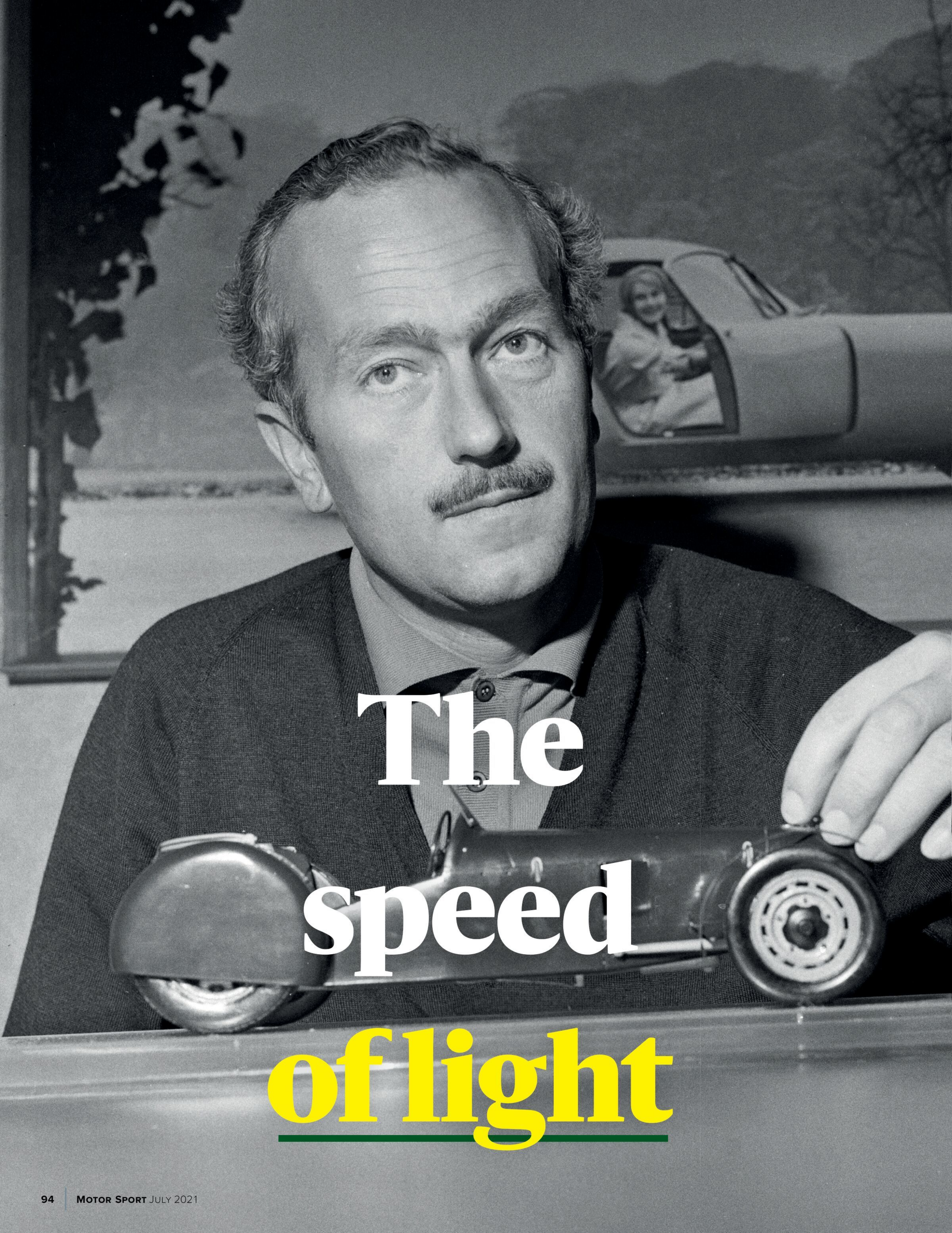
“The scope for this is huge. Marcello has had approaches from all the regional series that TCR runs in and it gives the manufacturers something that is road representative.”

ESKOOTR: YOUTHFUL EXUBERANCE

It falls outside of Campling’s remit, but we can’t sign off without mentioning the electric scooter series WAE has also taken on. As the eSkootr Championship suggests, this one is aimed at the ‘yoof’ market and looks set to capitalise on a form of racing that has already gained traction for the X Games generation. WAE is building the chassis, battery and powertrain for this one, for a project that involves Formula E racer Lucas di Grassi and ex-Williams F1 driver Alexander Wurz. Reaching speeds of 60mph, urban eSkootr racing promises to be spectacular and terrifying in equal measure.

So Campling and his team have a lot on their plate. Is there capacity for more? “Always!” he laughs. There’s an acceleration of innovation in motor sport right now, and it’s great to see Williams in the middle of it - just as Patrick Head was during the great days of his F1 team. But scepticism, cynicism and hostility linger over electrification for too many enthusiasts. You might be one of them. So what is Campling’s message to the doubters, to convince them to open their minds? “Sit in an EV race car off the line,” he says. “It’ll do an eighth of a mile quicker than anything with an ICE. Motor sport is a broad church. EV has earned its place - and it’s only going to grow.”





The speed of light

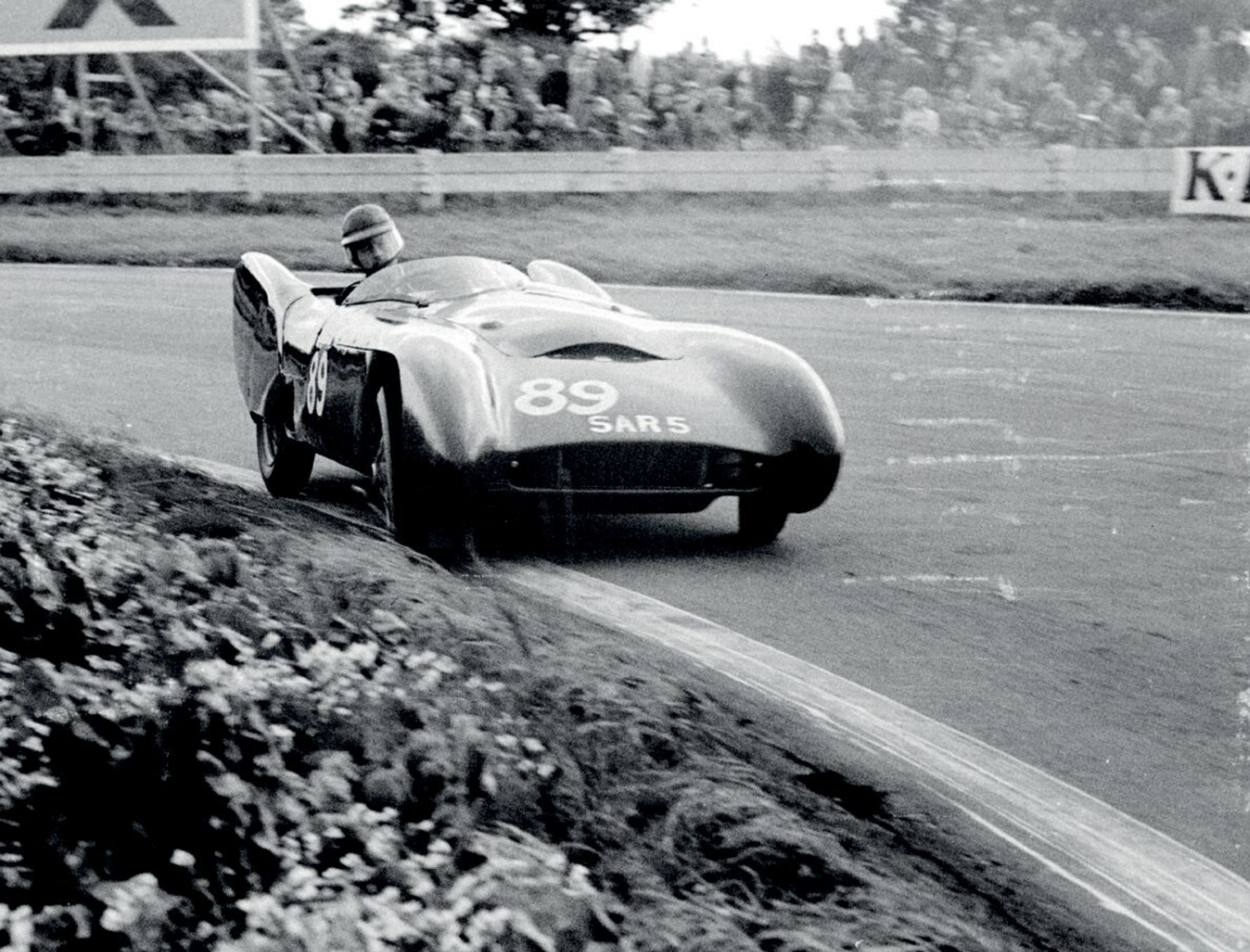
Colin Chapman's obsession with cutting weight brought success, but at what cost? An extract from **Karl Ludvigsen's** new book on the Lotus innovator reveals the tensions that arose between the boss and his drivers

FROM THE OUTSET COLIN CHAPMAN had no option but to be obsessive about the weight of his cars. He had no access to the exotic twin-cam engines used by such sports-car-racing rivals as OSCA, Porsche and Maserati. Not until 1957, thanks then to Coventry Climax, could he obtain power units that could match those of his rivals. So to achieve a competitive power-to-weight ratio with hopped-up Ford and MG engines lightness had to be a passion. It remained so throughout Chapman's career - though not always successfully.

Lightness was already high on the agenda in 1951 when Bill Boddy, editor of *Motor Sport*, visited Chapman to see his "astonishing" Lotus special that was causing such a furore in club-racing circles.

"The principle on which Chapman worked," he reported, "was to put nothing into the Lotus which had not been carefully weighed first. 'Simplicate and add lightness' was his motto, rather than drill everything full of holes afterwards.

"Throughout," Boddy continued, "the builders of the Lotus have carried a tiny 25lb spring balance, and any component that brings this to its full reading is regarded with very deep distaste indeed! So we find a front wing, complete with rigid 24-gauge struts and sidelamps, weighing a mere 10oz, and the beautiful little polished aluminium bodyshell only 65lb complete with hoops." ●



During a visit to Lotus's Tottenham Lane workshops early in 1955 author and bookseller John Lello had direct evidence of the weight-reduction craving of the Chapman team. While watching work under way on the new Mark IX he overheard a technical discussion: "The two-man conference which I had broken in on earlier adjourned from the office and concentrated on the car where various constructional details were proposed and discussed and it was apparent that a great deal of thought was going into the final detail. Weight being a dominant factor, the elimination of unnecessary panels and outriggers appeared to be the immediate problem."

With Williams & Pritchard the supplier of Lotus bodywork, inevitably they were drawn into debates about weight-reducing measures. When the Lotus 11 was being created, a key issue was the spacing of rivets attaching the undertray to the frame. While

Len Pritchard recommended 1in intervals, Colin Chapman argued for 2in. The next day he bustled into the workshop with both trouser pockets bulging with rivets. "Look at the extra weight you're costing me!" he shouted at Pritchard as he gestured at their useless mass.

"We were at the forefront of doing it lighter than anybody else," said Mike Costin. "He wanted everything light, didn't he?" This was especially the case in bodywork, Costin added, in which the works cars were higher-tech than those sold to customers. "Bodies for sale were made in 18-gauge aluminium but our works ones were always made in 20-gauge. And our works Mark IXs were different from the production Mark IXs. One was in 20-gauge aluminium, the other was in 20-gauge magnesium. Nobody had made a body in magnesium before."

What were the benefits of this obsession with lightness? Cars could of course be

stripped to the bone for short sprint races at Goodwood or Snetterton. Weights for long-distance races, however, indicate the level of preparation that a Lotus would require to do battle with the world's best. An apples-for-apples comparison is given by the weights of cars at scrutineering for the 24 Hours of Le Mans, a demanding race by any standards.

In 1956 at Le Mans a Lotus 11 with a 1460cc single-cam Climax engine weighed in at 1022lb. This was 22% less than a works Porsche Spyder of 1498cc, which weighed 1310lb. With the Climax developing 108bhp and the Porsche four-cam 127bhp, this gave the Lotus the advantage with 9.5lb per horsepower against 10.3 for the German car. On the Sarthe circuit only one of the Porsches turned a significantly faster lap than the Lotus.

Private Spyders were heavier than the works car at close to 1400lb. Surprisingly



Chapman oversees the work on a Lotus 11 at Le Mans, 1956. Opposite, clockwise from top left: Chapman at Goodwood, 1954, in Mark VIII 'SAR 5'; Le Mans 1957 with Cliff Allison at the wheel and Keith Hall; Lotus's F1 debut at Monaco 1958; in the Lotus 11 at the 1956 12 Hours of Sebring

"Nobody had made a body in magnesium before"

a 1.5-litre entry from Gordini, the French maker renowned to be obsessive about weight, weighed in at a hefty 1560lb. Two 1.5-litre Maseratis scaled 1562 and 1595lb. Only three cars starting the race were lighter than the 1.5-litre Lotus; all of them had half its displacement.

The special attention given to the works 1.5-litre 11 in 1956, co-driven by Chapman himself, was shown by the higher weights of the 1098cc Lotuses at Le Mans in 1956, which scaled 1075 and 1080lb - significantly more than the boss's car in spite of the changes needed to cope with the latter's greater power. A sign of the future, however,

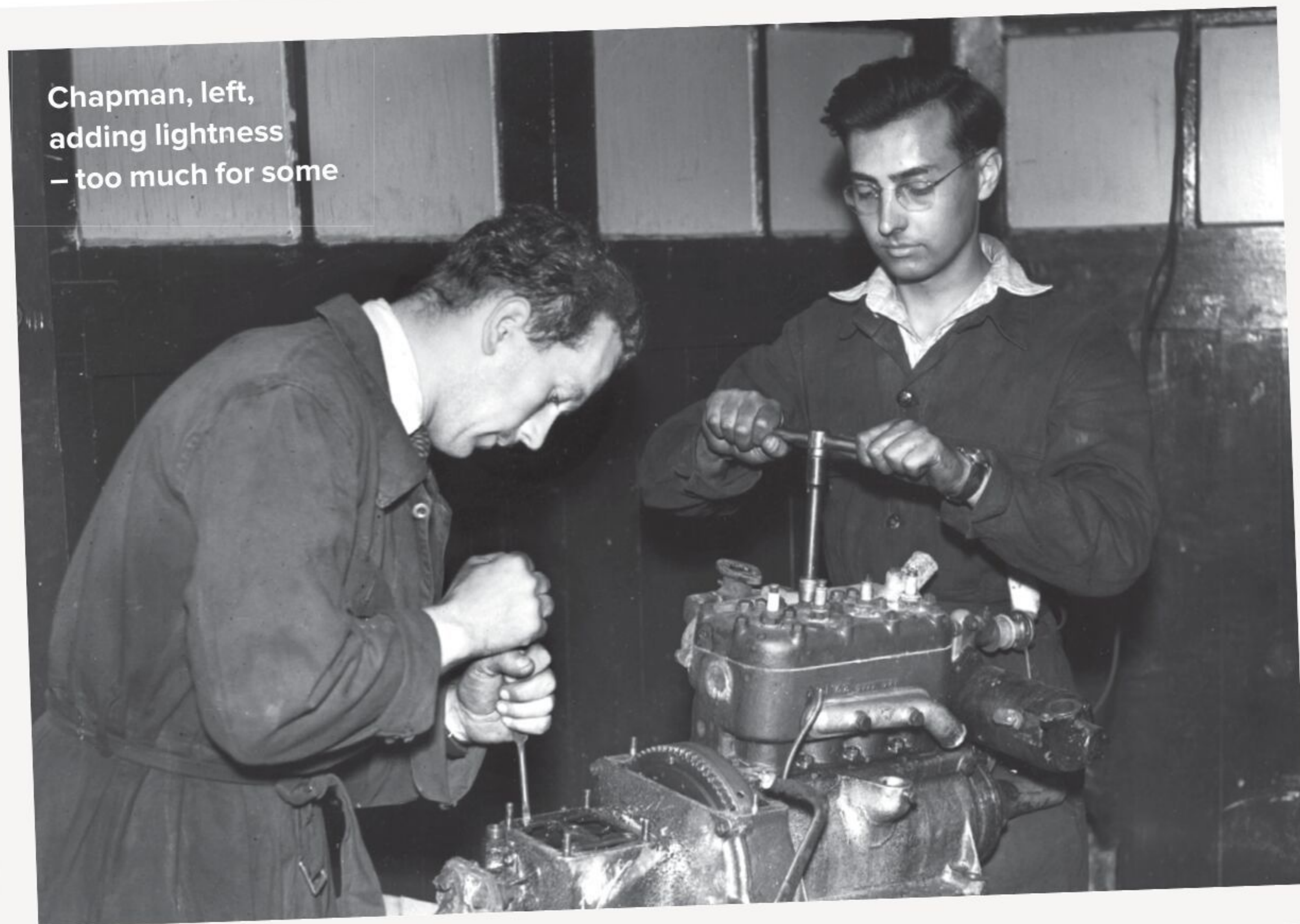
was the weight of the Cooper Bobtail with the same 1.1-litre Climax engine - only 1024lb, seemingly obtained with little effort.

The 1.1-litre Cooper entered at Le Mans in 1957 was heavier at 1142lb, while the three Lotuses similarly powered were around a hundredweight lighter at 1046, 1058 and 1060lb. The lightest car in the race was a Lotus 11 with a new 744cc Climax four. At 946lb it was the only car at Le Mans weighing less than 1000lb.

For the 1959 season Lotus introduced its new 17, on 11 lines but smaller all around and wearing its controversial strut-type front suspension. That it was lighter as well was

shown by the Le Mans scales, which credited the two 742cc entries with a svelte 860 and 851lb. With a 981lb Panhard these were the only three cars to break the 1000lb barrier in 1959. Three Elites entered weighed 1371, 1375 and 1430lb in a field that offered no direct comparisons.

The ruthless methods that Chapman used to shed weight were often ugly. Bungee-cord salesmen flocked to Lotus. "The big difference between our cars and, say, a BRM was the quality of the design and manufacture of the components," said Mike Costin. "BRMs were beautiful to behold while ours looked a bit scrappy. Ours were perfectly all right, other things being equal, which now and again they were." Where they could and did fall down, however, creating what Costin called "disasters and failures", were often the consequence of the "not very good bits we had. The company grew so quickly



“The mechanics found that the chassis was cracked in 11 places”

that we never did anything in the way of quality control.”

Controlling the quality of the early Lotus cars was a challenge in its own right for very good reasons, explained Keith Duckworth, who was in at the beginning of the Chapman legend: “Nobody had a lot of money in racing in those days. Therefore you were also trying to manufacture pieces by cheap manufacturing methods. You didn’t whittle everything from solid in those days. There were fairly simple welded-up structures. Quality control on those was very difficult.” Inspection of welds was a painstaking process well beyond the demands of time and cost of the early racing days at Lotus.

“With your mechanics and your system of looking at your cars and preparing them,” Duckworth told author Michael Oliver, “you should be able to catch most things at the stage that either some stretch in the material – it’s collapsed a bit – has occurred, or there is a crack forming and you can catch the crack before it is a disastrous failure. The only real way is to design light and then to have loads and loads of inspections and certainly lots of crack detection.”

Designing light and looking for failures to see what needed to be done about them was part and parcel of the Chapman

philosophy. “If you start off by designing everything conservatively and nothing fails,” explained Keith Duckworth, “there is no way that you are ever going to lighten your car. You can never lighten things under those conditions and therefore you don’t learn quickly enough. If you start off light and it breaks, then you will in fact strengthen the pieces that break. An awful lot of bits that you might have thought would have broken, won’t break. And that is the only way of getting a light car.”

At times, Chapman had ready access to the skills of engineers who were well able to calculate the likely stresses on a frame or suspension. The difficulty was that they seldom had access to all the information that they needed to create a worst-case scenario. “The problem is that you don’t know how hard your driver is going to hit kerbs,” said Duckworth, “or you can’t work out what the loads from hitting a kerb on any occasion are going to be. If you design it such that it will hit brick walls in all directions all the time, you will never win a race. Therefore you actually have to hang it out if you want to make a race winner.”

That it might have been hung out too far was the impression of Cliff Allison, who drove for Lotus from 1955 to 1958. Towards

the end of the latter year, he told Graham Gauld, “I was becoming unhappy about the reliability of the car. Vital bits kept falling off – like the steering wheel! He cut a lot of corners, did Colin, and made things lighter than they probably should have been. There was a saying at the time that if you get Colin to design the car and John Cooper to build it, it would be a world-beater and I think there was some truth in that. John tended to make things a bit too strong and Colin made them a bit too light.”

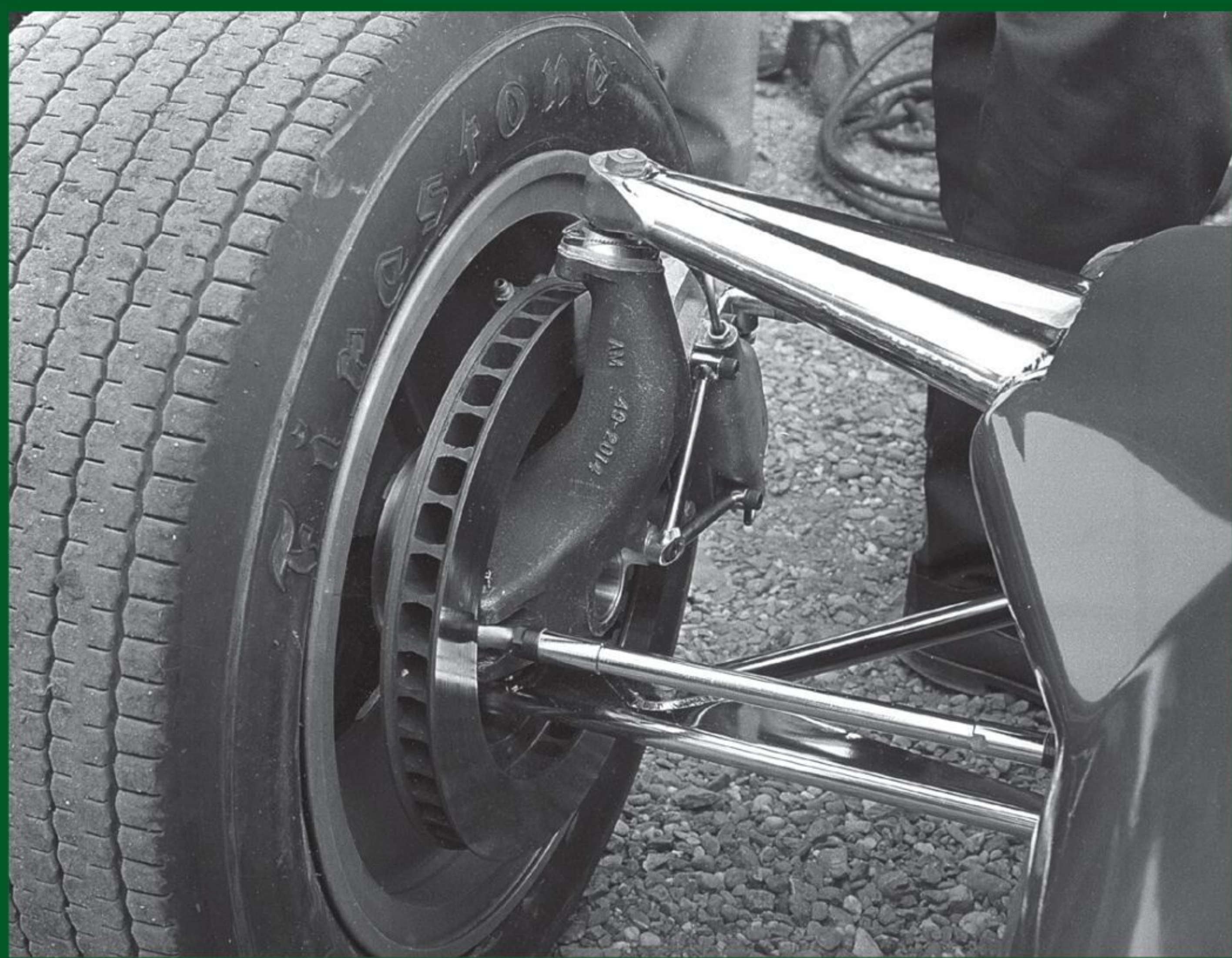
Allison left to drive for Ferrari and become that rarity for the era, an old, bold racing driver. He had persevered with Lotus, he said, being “absolutely convinced that Colin would build a world-beater because I had so much confidence in his ability as a designer. My theory was proved right because obviously he did make a world-beater and won Indianapolis, the world championships and won everything. I was quite convinced he would do that. The only snag was I thought he might kill me first! It was just as simple as that.”

In 1958 Allison had been racing the 12, Chapman’s first single-seater which was born the previous year as a Formula 2 car and upgraded to Formula 1. Even in Formula 2 form it had its problems, as driver Keith Hall discovered. In 1957’s Gold Cup Race at Oulton Park, he related, “I put up some quite good times in practice, but the car kept changing gear on its own. There was no way to stop it revving if it suddenly changed gear. The mechanics had a look at the car and found that the chassis was cracked in 11 places. What was happening was that the front and back of the car were moving apart. As the chassis moved, so did the rod controlling the gear-change.”

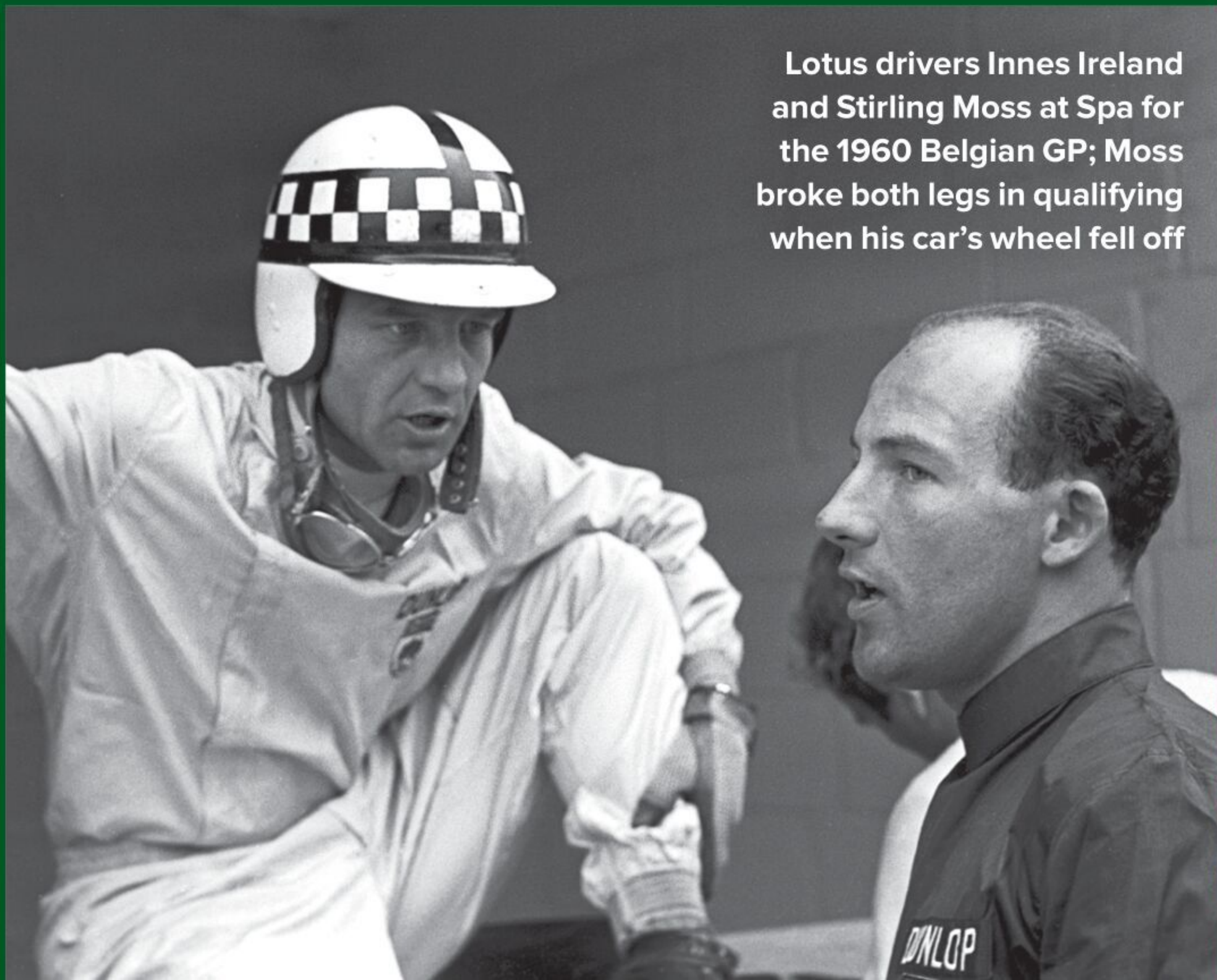
FOLLOWING ALLISON INTO THE Lotus works team was Innes Ireland. He had his own tales to tell from 1958 and ’59 when he soldiered bravely on with the front-engined 16 grand prix car. He walked out to take the start of the 1959 Portuguese GP, only to find that his car didn’t look quite right: “When I had a closer look at the front suspension I found a complete break in the main chassis tube – the big one that held the front suspension on! I could not believe my eyes!” Only minutes before the start he was equally astonished to see Lotus mechanics on the grid, welding his car’s frame together.

Innes Ireland’s experience with the 16 was nightmarish. “In one car,” he recalled, “at Monza in 1959, the mechanics found

Wreckage at the Spanish GP in 1969. Both Lotus entrants suffered failure of suspension-mounted wing supports. Hill is the driver here. Below: no such problems at Zandvoort in '67 – Jim Clark won for Lotus

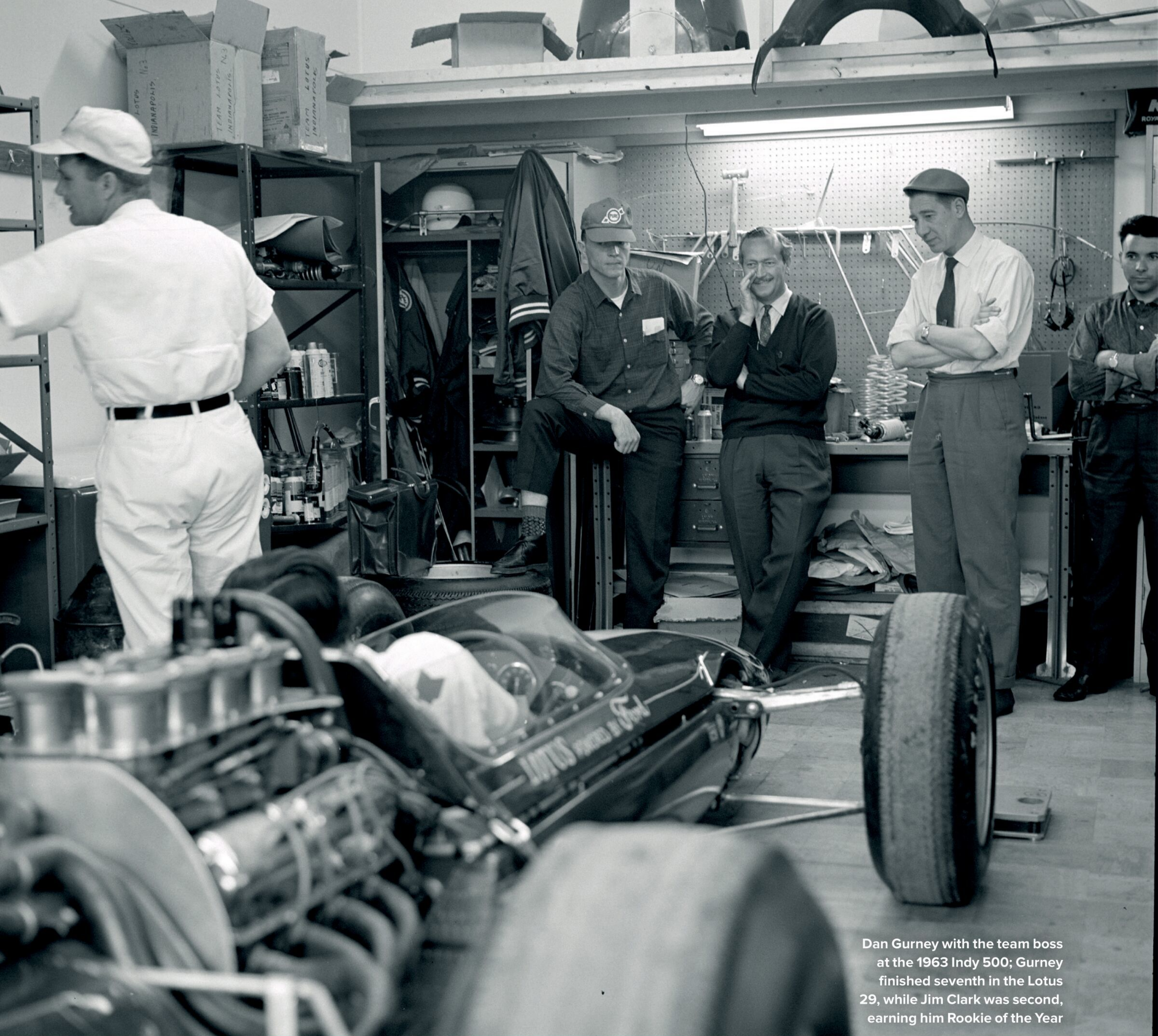


Lotus drivers Innes Ireland and Stirling Moss at Spa for the 1960 Belgian GP; Moss broke both legs in qualifying when his car's wheel fell off



In the pitlane at the 1971 Questor Grand Prix in California noting the times of Emerson Fittipaldi and Reine Wisell in the Lotus 72Cs





Dan Gurney with the team boss at the 1963 Indy 500; Gurney finished seventh in the Lotus 29, while Jim Clark was second, earning him Rookie of the Year



Lotus topped the F1 manufacturers' table in 1970 thanks to the 72. Left: Jim Clark testing the gas turbine 56 in 1968. Right: Lotus Eclat



14 major breaks in the chassis. I had breaks in the steering, wheels fell off, wishbones breaking - anything that could happen to a car." In those days failures usually happened in races because the Lotus budget didn't run to testing.

Things didn't get all that much better for Ireland and others with the mid-engined 18. At the 1960 Belgian Grand Prix at the daunting Spa circuit, Stirling Moss, Jim Clark, Alan Stacey, Michael Taylor and Ireland himself were driving 18s with 2.5-litre Climax engines. During practice Taylor's car sheared its steering column and Moss crashed when his Walker-stable car broke its rear hub and crashed heavily at some 130mph.

"The Lotuses of Stacey, Clark and myself were wheeled off to the circuit garage," wrote Ireland, "to have their hubs examined for any fault similar to the one which had developed in Stirling's car. The results were just terrifying. Clark's was uncracked, Stacey's was cracked half-way round the hub and mine was all but sheared off! I suppose it was a gauge of how hard the cars were being driven at the time. Moss obviously drove his car harder than any of the rest of us and his hub went first.

"Chapman explained that a fault had been found in one of the machine processes at the works. He had new hubs flown out from England and they were fitted on to our three cars. I can't say, however, that I was filled with confidence when I got to the starting line."

LOOKING BACK ON HIS TIME WITH Lotus cars, as prepared for him by Rob Walker's stable or by his British Racing Partnership, Stirling Moss had little praise for Chapman's passion for reducing to the max. "He was brilliant in what he could achieve," Moss reflected, "but the way that he did it was not very usable by most people. The cars were built too light - I don't know how many wheels I had come off but it was quite a lot.

"His strength was in innovation, new ideas," Moss continued, "his skilful way of getting what he wanted mechanically; but his weaknesses were first that frankly he didn't seem to have the ability to make it easy to utilise his skills - his cars were too difficult to drive - and secondly that he was prepared to pare things down to the bone without leaving either sufficient safety margin or doing enough research to cut out problems.

"I think he took short cuts. He was perhaps a bit lax on fine detail. A man of his

knowledge had no right not to be right on the dangerous things," summed up Moss.

These were the years in which, not without good reason, Colin Chapman gained a reputation as a designer who would sacrifice both strength and safety in search of lightness. When concerns were raised after the 1958 season that several Formula 1 fatalities might be the result of cars that were built too lightly, Chapman stepped in to argue to the contrary, pointing out that drivers died in crashes of cars that were among the heaviest.

The pressure on the Lotus chief's designers to reduce weight was unrelenting. One was Martin Ogilvie, who said, "There's a lot of sayings I go back to Colin Chapman for, such as, 'a quarter-inch bolt will lift a double-decker bus'." Designer Jo Marquardt recalled assisting Maurice Phillippe on the Type 56 turbine car for Indianapolis. It had a four-wheel-drive system made by Ferguson. "Ferguson schemed it at one size," said Marquardt, and Chapman said, 'Make it half that size.' Eventually they compromised."

These strictures applied to road cars as well as racers, as Tony Rudd recalled. He led development of the 1975 Eclat 2+2, which was based on the Elite. "The body was lighter," Rudd related, "and when I was travelling at a very illegal speed the rear window blew out! You do not put weight on a car in this company, so I had to trace to the heart of the problem, rather than just try and strengthen the rear-window surround or something like that. We discovered it was an exhaust-resonance effect on that lighter body."

Looking at the Lotus offerings of the mid 1970s, the Eclat 2+2 was a model that bore comparison with several rivals. It scaled 2160lb, which was 9% less than the Porsche 924 and 11% less than the MGB GT coupé

- two sports cars of similar size and carrying capacity. The 165bhp from its 2-litre four-cylinder engine gave a decisive performance advantage over both.

The Elite asks for comparison with the Porsche 911, both having comparable horsepower. While the German car weighed 2470lb the Lotus rival scaled 2335lb, 5% less. A less decisive difference, this suggests that the Lotus technology of glass-fibre body on steel backbone frame was progressively less advantageous, compared to conventional construction, the larger and more complex the car.

Most impressive was the two-seater Esprit, which at 1985lb was the only sports car of 2 litres and above to scale less than a ton. A contemporary rival was the Lancia Beta Montecarlo coupé, known as the Scorpion in America. The Lotus Esprit weighed 14% less than the 2295lb Lancia. While the latter was more luxuriously equipped the difference was still impressive, to the credit of relentless pressure on weight reduction.

Like team-mate Graham Hill, Jackie Oliver was lucky to survive the high-wing era with the Lotus 49 when heavy crashes followed wing failures with disastrous regularity. When a Lotus broke under Oliver, said the driver, "Colin was never sympathetic. He used to have cars fail all the time; that was part of his stock in trade. He used to push things right to the limit and, as a result, he had very competitive cars.

"The analysis was done with the driver in the car to see whether it would break," Oliver continued. "When things went wrong, being the type of person he was, he would normally be suspicious of the driver and he'd also be suspicious that the mechanics might not have bolted it together properly. Then, if those possibilities could be eliminated, ►



**"When I was travelling at speed
the rear window blew out"**



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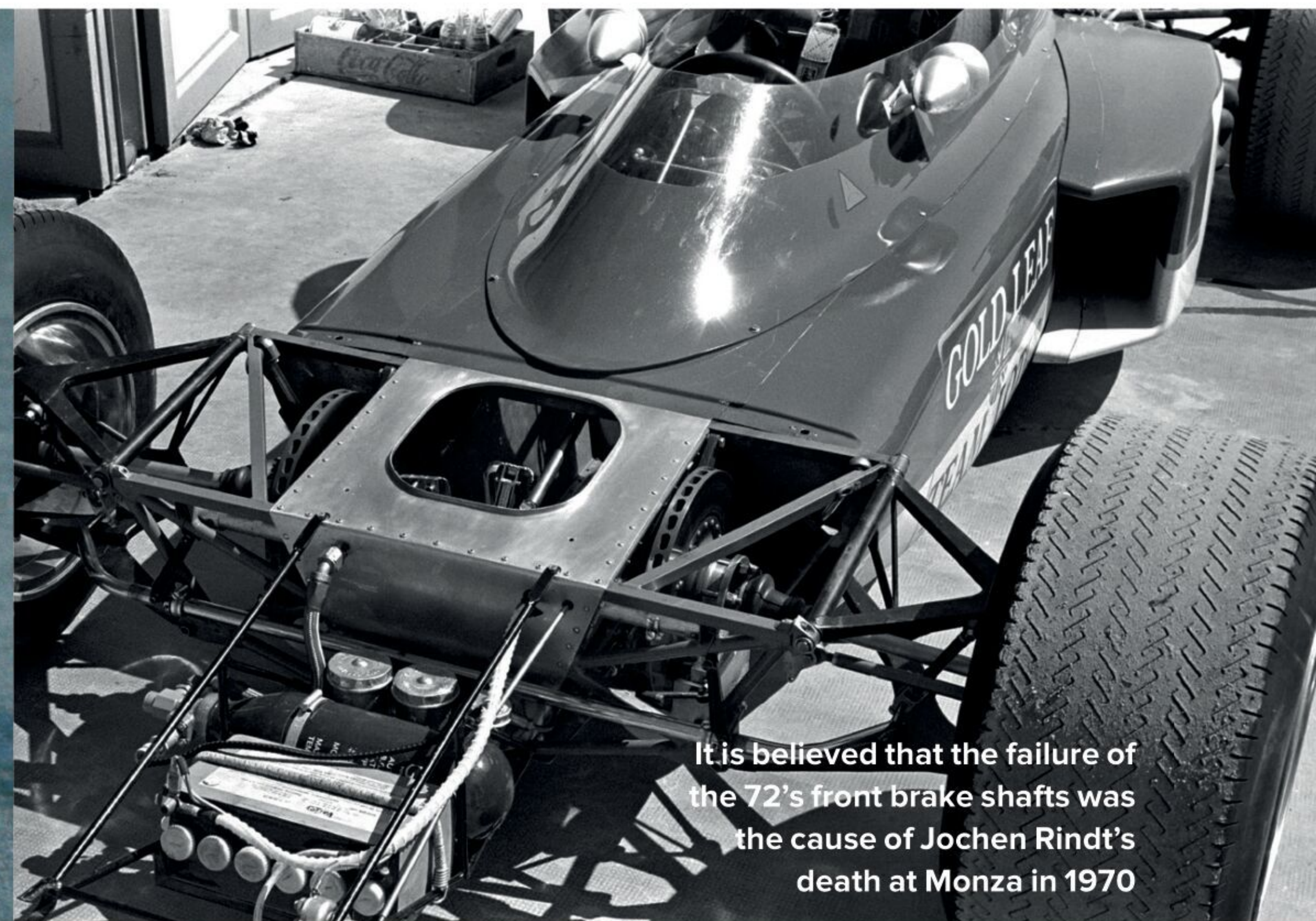
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Jacky Ickx in the Lotus 76. The car missed its brief to be a lighter, better 72



It is believed that the failure of the 72's front brake shafts was the cause of Jochen Rindt's death at Monza in 1970

he would consider if it could have been a design failure."

"The frailties were in the area of the 49's rear-suspension mounts," said fellow Lotus driver John Miles, "which were tubular frames bolted to the bellhousing/gearbox. These were redesigned a number of times but kept on breaking for much of the first 15 months or so of the car's life. The ZF gearbox also protested at the cornering stresses being fed through its housing and was ultimately replaced."

Weight saving was evident in every aspect of the Ford DFV-powered Formula 1 Lotus 72 which made its bow in 1970. Immaculately detailed by Maurice Phillippe, it was an object lesson in design for purpose. "Saving weight, of course, is part of every racing car designer's philosophy," wrote

"The frailties were in the area of the 49's rear suspension mounts"

Anthony Curtis, "but with Colin Chapman it amounts to a monomania accentuated in this instance by a desire to get ahead of three competitors using the same engine. It is to be seen in every part of the car, especially the suspension components which are fabricated from various exotic materials all of a high strength, which is said to compensate for their unusual slenderness."

"But boy," said John Miles, "was it fragile. We seemed to be forever stitching things back together or making stronger bits. Nearly every time I got into 72/1 the engine blew or something fell off."

Over time, as stronger bits were added, the 72 put on weight, so for 1974 the new 76 was designed to rectify that. "It was meant to be a lighter 72," recalled team manager Peter Warr, "keeping the good bits and leaving out the bad bits. But it was a disaster; it was actually heavier."

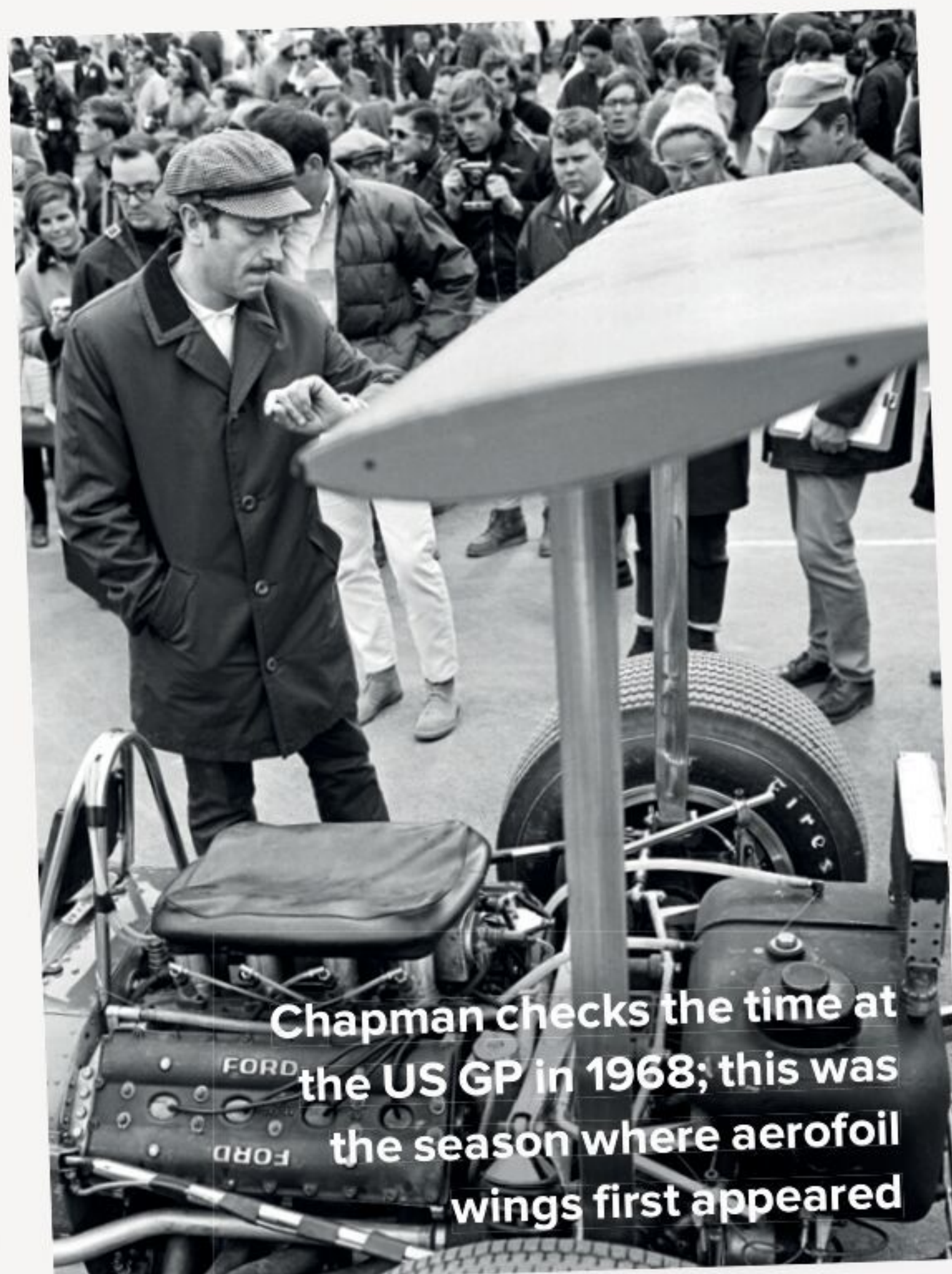
This was addressed in the design of the 77 for 1976. When all the cars were weighed before the Brazilian Grand Prix, the team's two 77s scaled 1281 and 1283lb, a small safety margin over the minimum weight of 1268lb (575 kg).

In the Brazilian weighing only one car was lighter, the 1272lb March-Ford 761. Ferrari was pretty good with the 1301lb of its 312T; this was an impressive result for a

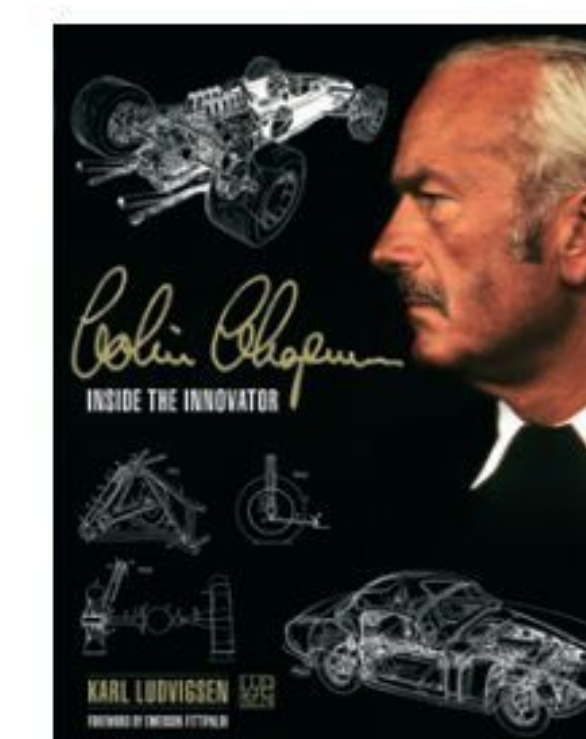
12-cylinder car. The Tyrrell 007 was hefty at 1380lb, as was Emerson Fittipaldi's Copersucar-Ford at 1411lb. Its sister was the heaviest car weighed at 1484lb. Not quite so bad at 1475lb - albeit massively overweight - was the Brabham BT45 with its 12-cylinder Alfa Romeo engine. These figures put into perspective the benefit achieved by Lotus with its concentration on lightness.

That this philosophy made no allowance for the unexpected concerned Colin Chapman not a whit. Each designer brings to motor sports a set of criteria that they consider paramount. For Colin Chapman sheer speed was all-important. He ranked leading races rather than finishing them as a hallmark of success. Creating a car that was as light as possible, both dry and fuelled, was a major ingredient in his recipe for speed.

In achieving this Chapman was, if possible, more ruthless than in any other aspect of his design activities. **o**



Chapman checks the time at the US GP in 1968; this was the season where aerofoil wings first appeared



COLIN CHAPMAN: INSIDE THE INNOVATOR

by Karl Ludvigsen

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Talent to

The youngest driver on the F1 grid, Yuki Tsunoda has been known to lose his cool on the team radio, yet the impulsive 21-year-old has the self-belief to finally break a Japanese driver into the winner's circle. **Adam Cooper** interviews the country's great hope – without an expletive to be heard...



swear by

It was no surprise to some that Yuki Tsunoda took points from his first F1 outing with AlphaTauri at Bahrain in March



RED BULL CONTENT POOL, HONDA

CAN YUKI TSUNODA BECOME THE first Japanese driver to score a grand prix victory? That's certainly the view of his main backers, and if he continues on his planned progression and eventually joins Red Bull Racing, the opportunity to win races will be there.

Tsunoda has already made a little bit of history by becoming the first driver born in the 2000s to make it to F1. It's been far from an easy transition with AlphaTauri - incidents and colourful radio messages have attracted as much attention as his pace - but those who know him well agree that he is a fast learner, and he will get there.

"He had a stupid mistake in Imola," says his number one supporter, Dr Helmut Marko. "Now he is a little bit more careful. We are fine with him. Progress is as planned."

"He coped with every situation we threw at him," says his 2020 F2 team boss Trevor Carlin. "He'll invariably lose a few front wings in the first few races, because you've got to adjust to the car, and he will be pushing. But once he's got through that phase, he'll be very hard to beat."

Tsunoda's interest in cars was inherited from his father, who worked in insurance. In 2007 the family went to the Japanese GP, where the top three qualifiers were his current F1 rivals Lewis Hamilton, Fernando Alonso

and Kimi Räikkönen. "Before I was born my dad was doing motor sports in Japan," he says. "Just lap times with a normal car, or a tuned car. I started karting when I was four years old, and when I was seven years old I went the first time to Fuji to watch F1."

"To be honest at that point the karting world I was in and the world of F1 were too different. Of course I thought these cars are fast and cool, but for me it was too loud! I always covered my ears to hear less. I don't have good memories about the sound. But now I like the sound of the old engines."

"I was not really following F1. After Fuji I think I went once to Suzuka, when Kamui Kobayashi got a podium [2012]. That was the last time I saw F1, so I went only twice. It was a similar feeling, I still felt it was too noisy! But actually I also felt one day in the future I want to compete in the category, but still it was too far away from what I was doing."

After success in karting Tsunoda was a few weeks shy of his 16th birthday when after passing through the Honda school at Suzuka he made his car racing debut in Japanese Formula 4 at the same venue in August 2016. Remarkably, in a field of 32 he finished second in his first race and followed up with a fourth. In 2017 he ran a full campaign, and finished third in the championship. By then Honda had got fully behind him, and he became part of the Dream Project for 2018. 🏁

"I thought F1 cars are fast and cool, but for me it was too loud"



Tsunoda (5) and team-mate Teppei Natori (6) in Japanese F4. In 2018, they finished 1-2 in the championship



At Monza in 2019, Tsunoda scored an unlikely F3 win for Jenzer. Helmut Marko is delighted

“He basically self-learned from his mistakes. He is like an iPhone”

“Since karting my father was paying. He supported me in almost everything. But for formula cars it’s a big step of money. I think my dad couldn’t pay the whole thing. There were great junior programmes from Honda and Toyota in Japan, and if I became a formula driver, there was support there. So we decided to join Honda, because Honda was also doing Formula 1.”

Tsunoda duly won the 2018 Formula 4 title, just beating fellow Honda protégé Teppei Natori. The manufacturer had already introduced him to Red Bull, and an intrigued Marko could see potential. Thus for 2019 Tsunoda was brought to Europe and given a busy double programme of FIA F3 with the Swiss Jenzer team, and Euroformula Open with Motopark.

The choice of the small Jenzer outfit rather than a front-running organisation was an intriguing one - success was not guaranteed, and he would have to fight. The 18-year-old also found himself living alone near Geneva, with only a physio for company.

“It was a big step, and also that was the first time I lived in another country. It didn’t feel like a big issue when I moved to Europe - with the language and the food I struggled a little bit! But I didn’t really feel I missed

home and things like that. I was still focusing on my racing.”

He faced a number of challenges, and juggling two programmes - with completely different tyres - was not easy.

“He basically self-learned from his mistakes,” says avuncular F3 team owner Andreas Jenzer. “He is like an iPhone, self-learning. You don’t have to tell him. When he does a mistake, the next lap, he doesn’t do it again. When he didn’t hit the apex, on the next lap, he hit the apex, basically. When he made a mistake, or when he did something wrong, you only really had to fine-polish a few things with him.”

He soon began to log F3 points, and second place in the Spa feature race caught the attention. Next time out at Monza he was third in the feature, and then he won the sprint. A Jenzer driver was not supposed to challenge for podiums.

“One or two times I had quite a strong discussion with him,” says his former boss. “Because obviously Jenzer Motorsport is not considered as a top team. I told him, ‘Look Yuki, in qualifying drive a safe lap, qualify P8, or qualify P5, and then we can race from there.’ After the briefing he took me to the side and said to me, ‘Listen Andreas, never

Japan's rising suns

Despite a slew of talented Formula 1 drivers from the Far East, success has been elusive – and the problem could be cultural

After Japan finished 17th in the medal table at the 1992 Barcelona Olympics a senior member of the national team organisation complained about the lack of commitment from his athletes. They were too content with just being there, and weren't determined enough to be winners, was the gist of what he said. It was a reflection of the Japanese character.

The comments resonated because they also seemed to be applicable to motor racing. By 1992 Satoru Nakajima had retired after an undistinguished spell in Formula 1, and Japan was represented on the grid by Aguri Suzuki and Ukyo Katayama. Although both men had their moments, ultimately neither achieved very much. Indeed, they seemed content just to be in F1, their drives secured by sponsors or engine suppliers.

In later years Takuma Sato (*right*) and Kamui Kobayashi would show a more aggressive approach, especially when racing at

home and inspired by the Suzuka crowd. Neither ever made it into a front-running F1 team, but their subsequent success in IndyCar and the WEC respectively showed that they were not lacking in talent.

Crucially both men also left Japan at an early stage, Sato running initially in Formula Opel, Vauxhall Junior and Class B F3, and Kobayashi in Formula Renault. Both were thus immersed in European racing culture and enjoyed an education that they wouldn't have received had they moved up the ranks at home, as competitive as the local scene is.

The country's best and most fiercely determined domestic star was Kazuyoshi Hoshino, whose many successes including pipping Eddie Irvine to the 1993 Japanese F3000 title at the age of 46. However, the odd sports car race aside, he never made a concerted effort to compete overseas.

In making Tsunoda take

the FIA F3 and F2 route rather than move up to Super Formula at home, Honda and Red Bull gave him the chance to learn and polish the rough diamond personality that makes him a winner.

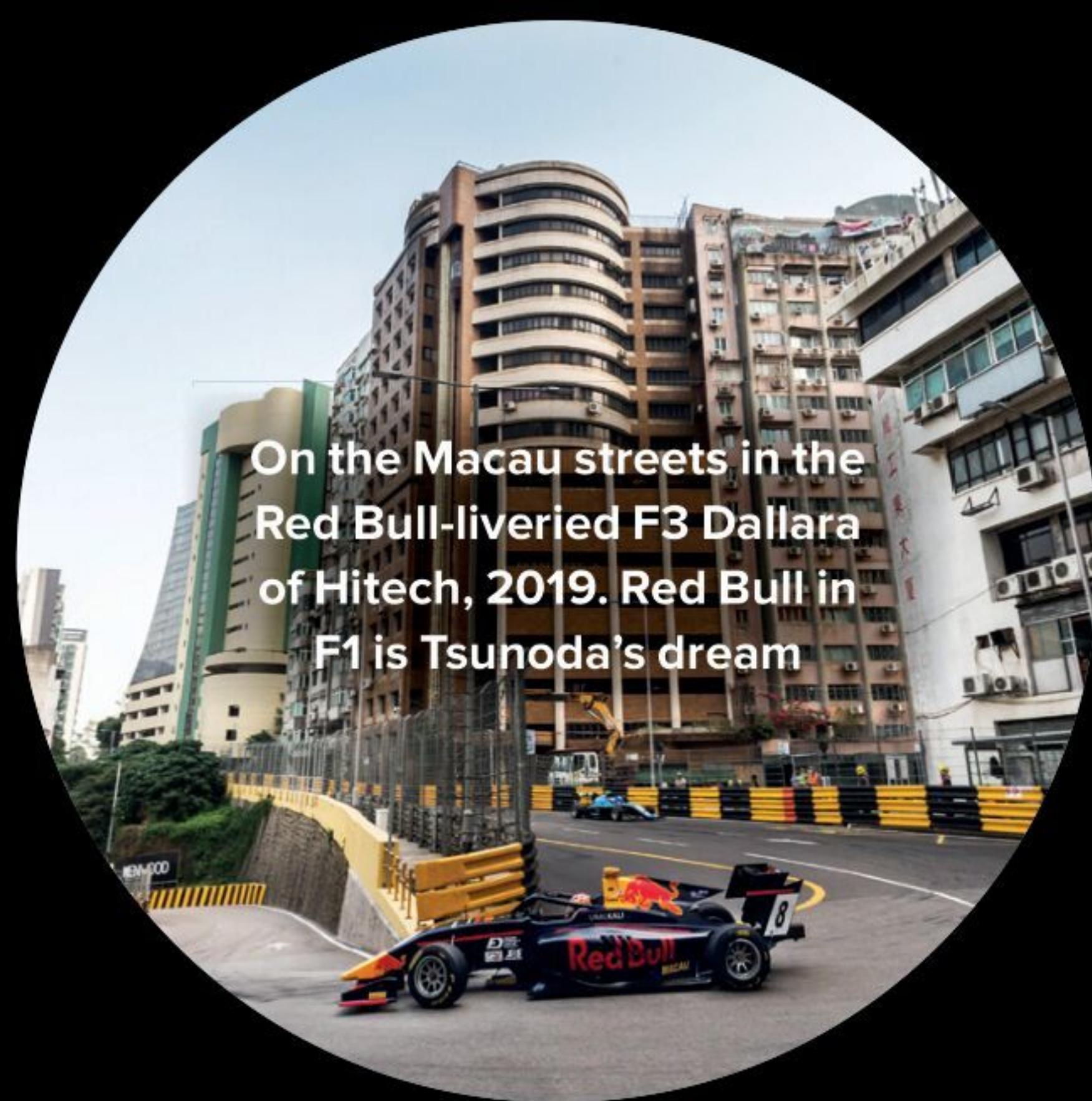
"Takuma and Kamui were also very quick," says Honda F1 boss Masashi Yamamoto. "But Yuki had opportunities, like meeting Helmut. Other drivers didn't have that kind of environment, or opportunities. He is in the right place at the right time."

He's also part of a new wave of Japanese sporting stars for whom just being there is not enough. In 2018 Naomi Osaka became the first Japanese winner of a tennis grand slam event, and this year Hideki Matsuyama became his country's first golf major winner. Tsunoda has the opportunity to become the next national hero.

Kazuyoshi Hoshino raced in two F1 GPs at Fuji. He finished 11th in October 1977 in the Kojima-Ford KE009



BERNARD CAHIER/GETTY IMAGES



On the Macau streets in the Red Bull-liveried F3 Dallara of Hitech, 2019. Red Bull in F1 is Tsunoda's dream

again tell me that I have to qualify P8 or P5. We are good enough to do better than this.'

"So I said, 'You are at the moment on this level.' And he really insisted. He said to me, 'You only have to tell me to do pole position, you only have to tell me to win, you only have to put pressure on me that I can win. I don't really want to qualify P8, I always try to qualify on pole.' Many times he fell off the road, but his own education was so much to just go flat out, to be in front."

"I knew that it was going to be a difficult year for me as a rookie," Tsunoda recalls. "First time in Europe, and the tracks were going to be first time. I had to learn lots of things. For me it was a really good thing that I went to Jenzer, which is not a too strong team, so I could focus on my driving

to perform well for them. If I joined a strong team, and had a strong first year, for me it's easy. At Jenzer we built it up together, the whole team."

By now Tsunoda was viewed by Red Bull as the real deal, and with Honda's support he was promoted to F2 with Carlin for 2020. He was quick from the off, taking a feature race second place in round two in Austria, and then a third and a sprint win at Silverstone. Victory in the Spa feature was further proof of his talents.

"He's a very natural racing driver, he's very determined," says Trevor Carlin. "He really, really wants to win and do well. The biggest quality, apart from his natural skill, is his ability to listen to advice from his engineers, and then implement it."

"The speed at which he learns is incredible. So I really think it won't take him long at all to get up to speed in F1. After the first third of the year, he will be on top of the car."

"You would think he's a school kid. He's tiny, small, very shy. But when you put him in the car and he puts the visor down, it

unleashes the beast! He's a nice young man. He's very polite. But really all he's focused on is driving. That's all he's interested in."

There were a few ups and downs, but Tsunoda eventually finished third in the Formula 2 championship, signing off with a feature race win in Bahrain. He'd done more than enough to secure a super licence and to guarantee his progression into AlphaTauri for 2021.

"I was already 19, and I aimed to step up at 20," he says. "Also alongside me there are a lot of other Red Bull juniors, so I always put pressure on myself to step up. And Helmut Marko told me I had to be fourth to take a super licence. I wasn't thinking about a second year of F2."

F1 was a big step for just his third season in Europe. AlphaTauri helped with a busy winter testing programme at Imola and Misano using 2018 and 2019 Toro Rosso chassis, with a focus on experimenting with set-up, steering wheel controls, and so on. He also moved to Milton Keynes in order to have easy access to the RBR factory simulator that AlphaTauri uses. ▶

"All he's focused on is driving. That's all he's interested in"



Tsunoda has had a long association with Honda, which continues with the AlphaTauri-Honda AT02

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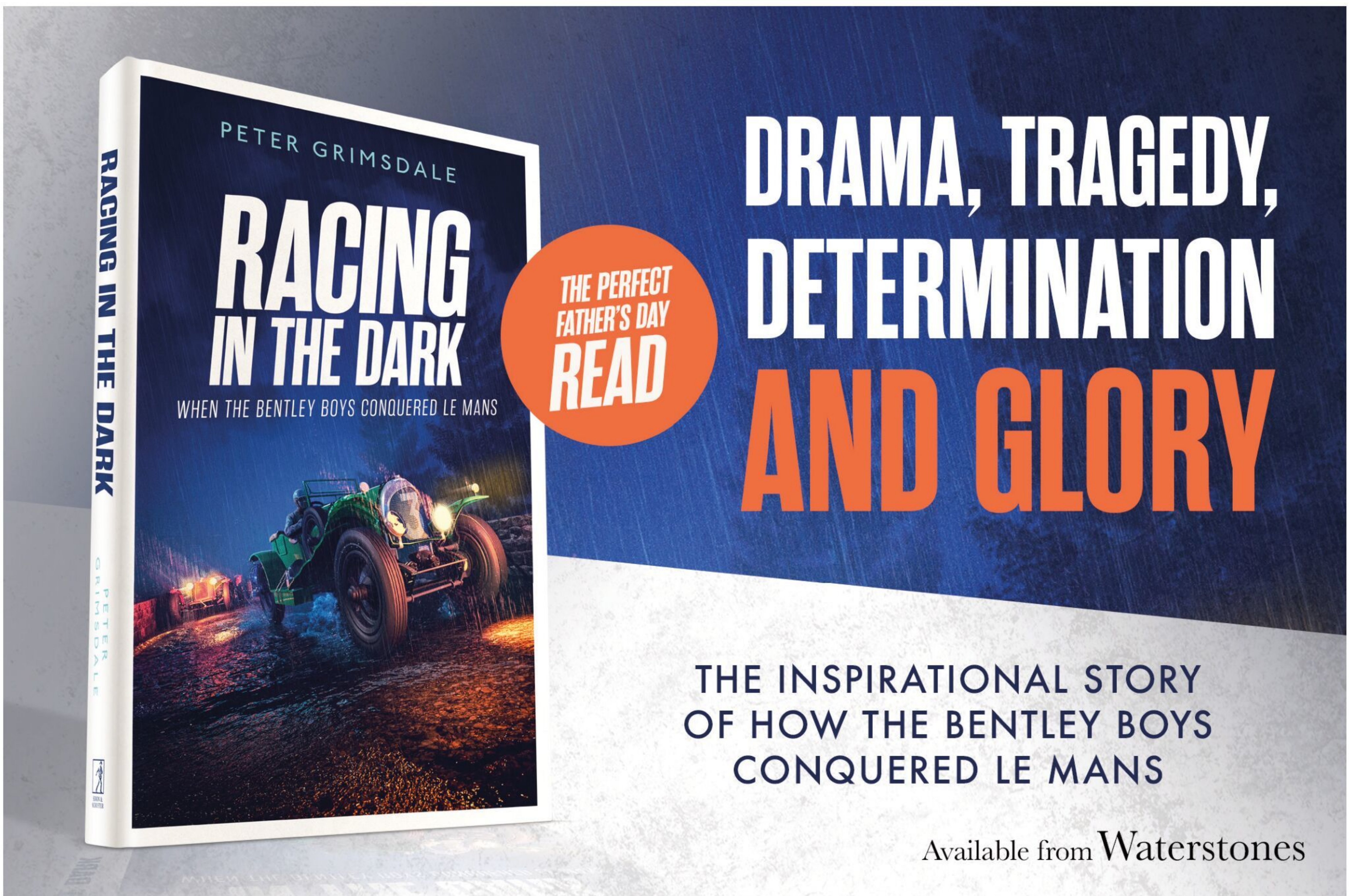
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Tsunoda familiarises himself with his cars quickly. Expect improvement at AlphaTauri in 2021

Tsunoda impressed with his pace in the new car at the official Bahrain test, and caught the eye by being second fastest in Q1 on the race weekend. After an overcautious first lap he recovered to log points with ninth on his debut. He passed Lance Stroll on the last lap, noting that he “wouldn’t sleep tonight” had he not tried.

Things began to unravel with a huge shunt in Q1 at Imola and then a mistake in the race, followed by tough weekends in Portugal and Spain. Emotional radio messages have indicated just how much his quest for success means to him – at the latter event he took to Twitter to apologise to the team after appearing to criticise the car.

“Sometimes his temper seems to be a little bit South American-style,” says Jenzer. “When you look also at his F2 season, he received penalties, he was at the stewards quite often.

sometimes in a negative way,” he says. “Most of the time I’m trying to improve that kind of stuff, especially in radio communications.

“After Imola I analysed it, and spoke with my psychologist trainer. Races when I don’t shout on the radio and stay calm tend to be good ones. I know my weak points, but when I wear the helmet and go to the track, it’s a bit different. For me it’s not easy to stay calm.”

The expected results might not have come yet, but keep an eye on Tsunoda as the season develops – his history in other categories suggests rapid progress.

“If I can take the first podium that would be great for Japan, and also for me,” he says. “But at the moment I’m not thinking too much about those things, I’m just thinking about my driving, and also my learning curve. I have to get really focused on every lap to have experience. I’m just trying to get as many



in Imola I took it a little bit the opposite way from him – he was a bit angry!

“I know his personality, he always goes up and down. But we’re always serious about the racing, and I know how to make him happy. I’ll just try my best.”

Sergio Pérez has the RBR seat for now, but if Marko and Christian Horner believe that Tsunoda is ready, at some stage he will be promoted alongside Max Verstappen – and then it will be sink or swim.

“I think Yuki doesn’t care about Max,” says Jenzer. “He doesn’t care about any other drivers, he looks only in his own world.

“Obviously I am coming from the old school, and we were talking about a lot of different drivers. Many, many times he said, ‘Who?’ Only the name Ayrton Senna is in his brain, but I never heard him talking about, ‘I like this driver or I like that driver.’

“If you ask him, ‘Who is your idol?’, maybe he’ll put a football player instead of a racing driver. Actually we did put this on paper, and his answers were on our website. ‘Who is your favourite driver?’ You know what he put? ‘Yuki Tsunoda!’”

“Races when I don’t shout on the radio tend to be good ones”

And if there is something he needs to change, in this new clean F1 world, where you are not allowed to do this, where you’re not allowed to do that, maybe he has to control his temper a little bit better...”

Tsunoda, who has worked on his mental approach with a sports psychologist, admits that he has to control his feistiness.

“That’s my personality, which maybe turns sometimes in a positive way, and

points as possible for the team, and to have more consistency.”

And what of the longer term? The departure from F1 of key supporter Honda after this season won’t help, but if Tsunoda is doing the job at AlphaTauri, there’s still a clear path to the top.

“In the future it would be really good to join Red Bull Racing; they are a really strong team. And also make Helmut happy, because

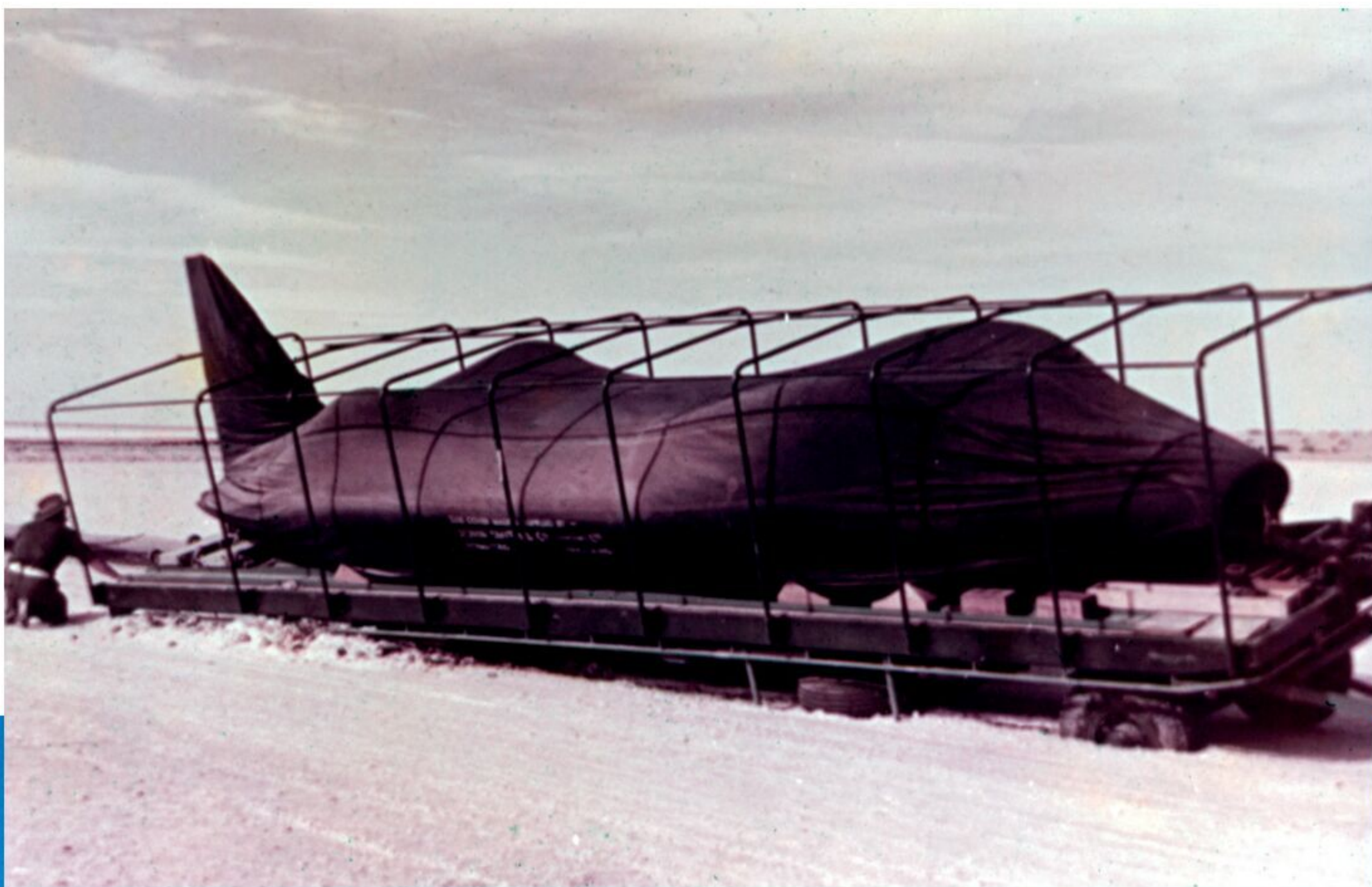
A SWAN SONG FOR SPEED

In 1964 Donald Campbell took Bluebird CN7 to Australia's Lake Eyre. It would prove a historic venture and now a new cache of photographs from a team member offers a rare insight into a triumph that marked the end of a golden era





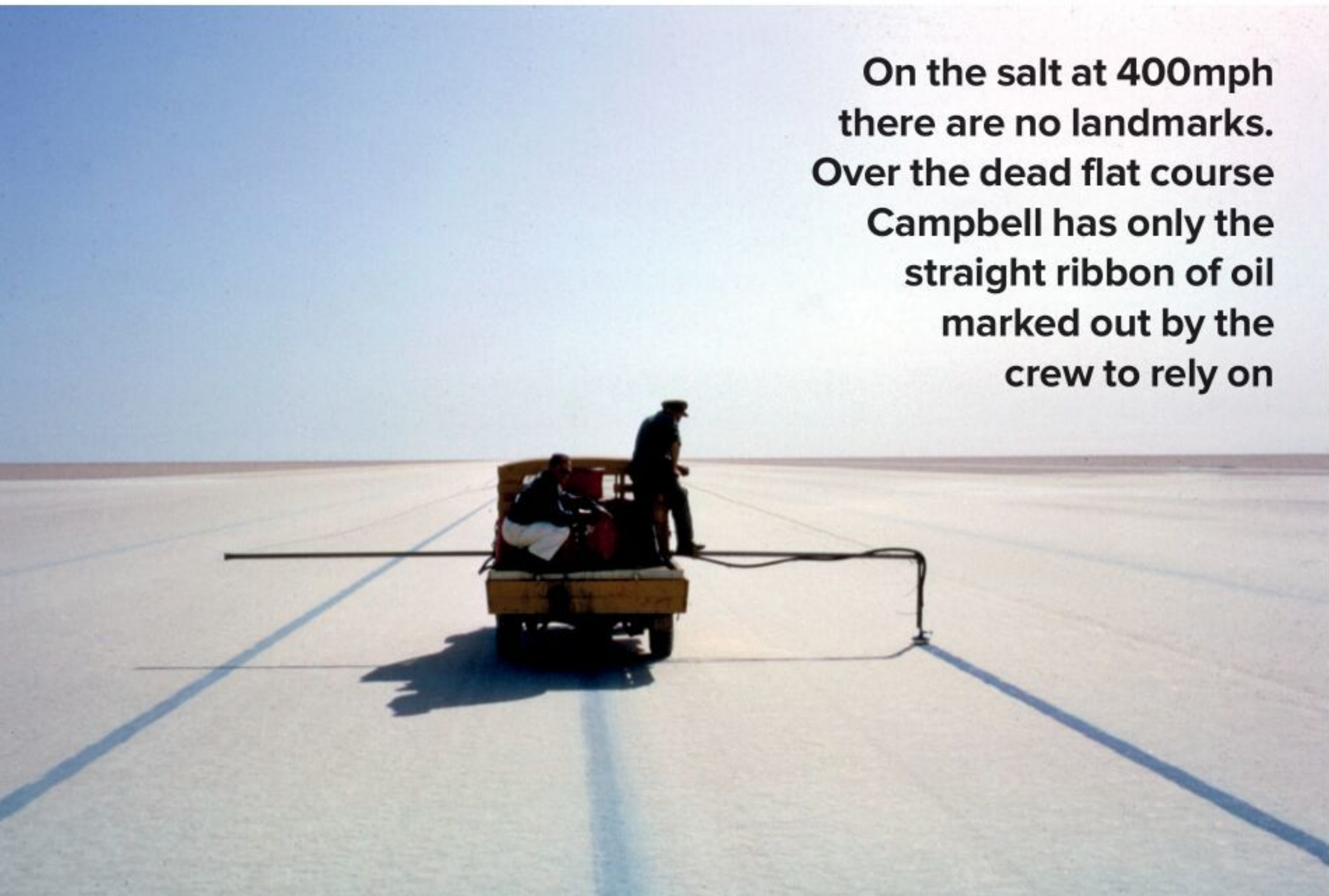
Donald Campbell poses shyly beside his huge gas turbine-powered car with its new stabilising fin, while a mechanic works in the wheelarch of the salt-streaked machine



Top left: aviation fuel from sponsor Ampol ready to feed the Proteus turbine.
Above, salt problems: the sheeted car lies askew after the trailer breaks through the fragile surface



Campbell's entourage included many ancillary vehicles. The yellow truck is the mobile refueller which attends Bluebird at the turnaround between runs



On the salt at 400mph there are no landmarks. Over the dead flat course Campbell has only the straight ribbon of oil marked out by the crew to rely on



Cookout for men of the local sheep station, whose wives helped Tonia Campbell with catering and washing

Bearing the twin flags of Great Britain and Australia, Bluebird sits in the sun outside her temporary canvas hangar




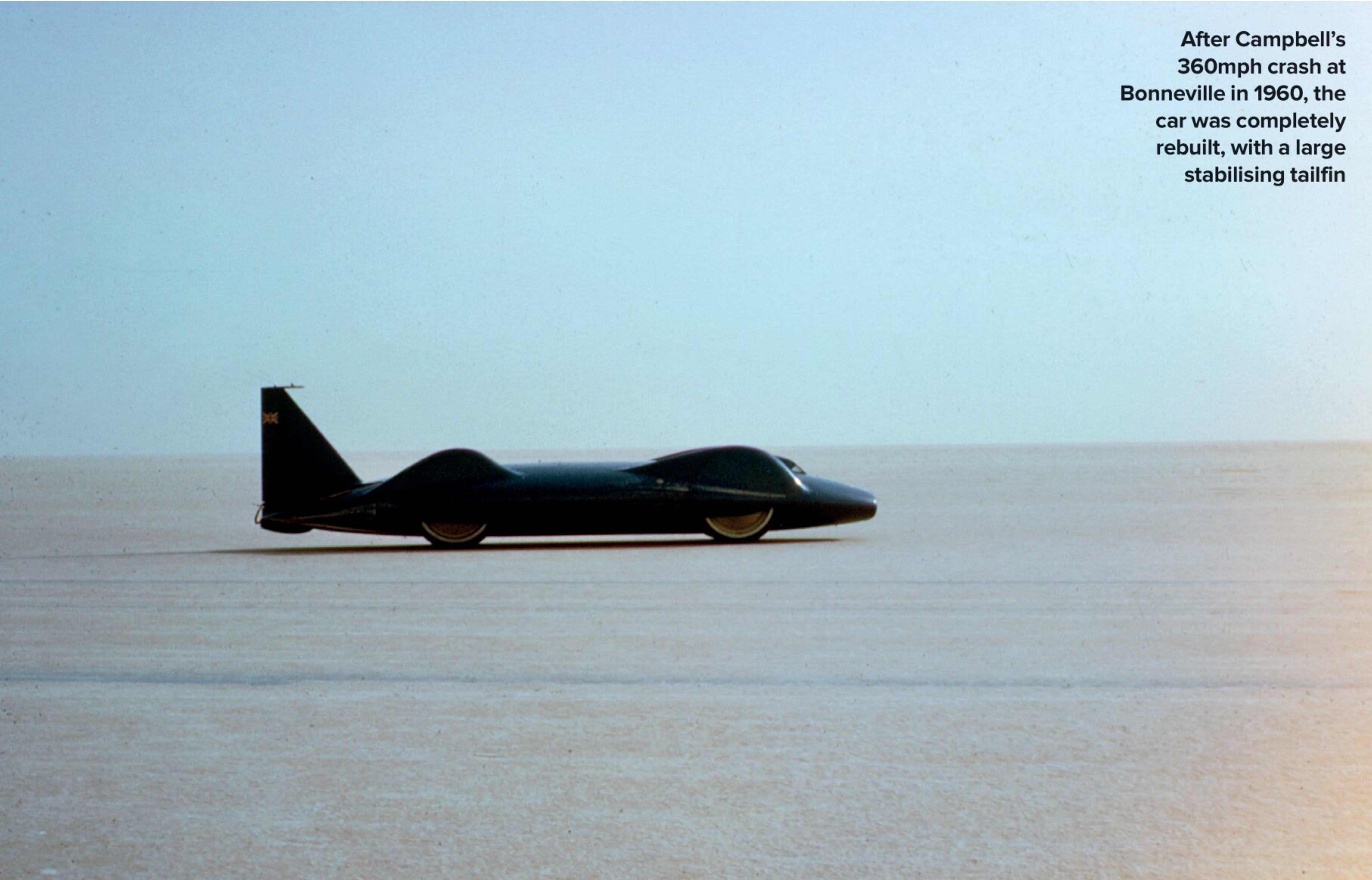
A De Havilland Otter was a faster way to transport personnel and supplies across the barren dry lake than wheeled vehicles



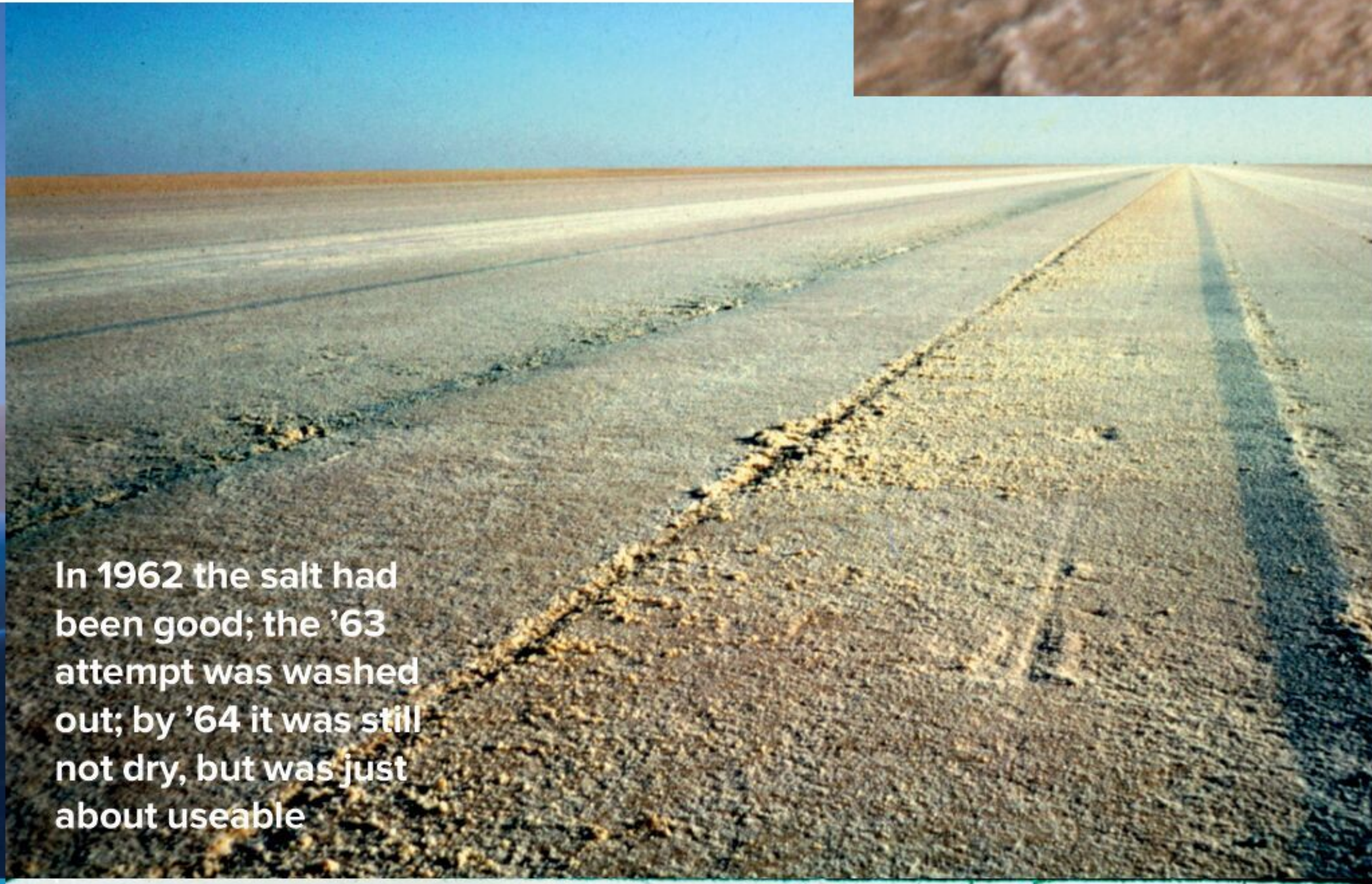
SUCCESS - BUT IT WAS BITTERSWEET. By 1964 Donald Campbell had battled accident, injury, weather, and increasing public criticism in his fraught quest for the Land Speed Record. He saw it as a feather in Britain's technological cap, but public interest was waning and it was an increasing struggle.

These pictures, from a collection of 93 newly donated to the National Motor Museum's photo archive, were taken by a team member during the ultimately triumphant attempt when Bluebird CN7 recorded 403.10mph over the measured mile across Lake Eyre, South Australia. But a poor salt surface, a shorter than desired course and tyre problems held back the 4WD machine which had been designed for speeds nearer 500mph. Nevertheless it was a new record, and 200,000 people turned out to watch him drive the car through the streets of Adelaide afterwards. Meanwhile the FIA had decided that jet-powered vehicles would now qualify for the LSR; this would be the last outright record set by a wheel-driven car.

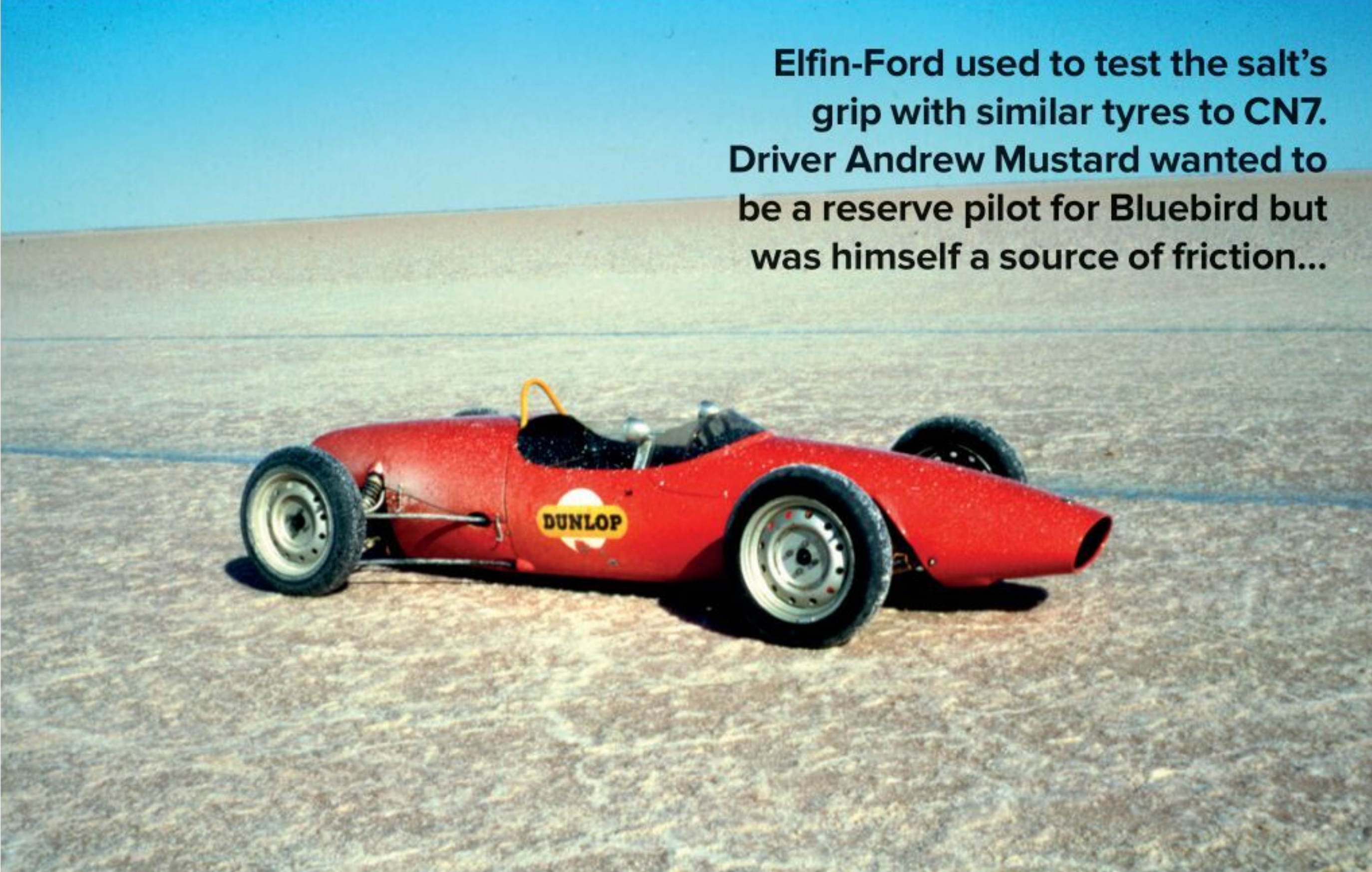
But Campbell wasn't finished with his record-breaking plans. Having shipped his jet-powered hydroplane, Bluebird K7, to Australia, he launched it on Lake Dumbleyung, eventually clocking 276.33mph. It was the last day of 1964, making Donald Campbell the only person to have broken both the land and water speed records in the same year. 



After Campbell's 360mph crash at Bonneville in 1960, the car was completely rebuilt, with a large stabilising tailfin



In 1962 the salt had been good; the '63 attempt was washed out; by '64 it was still not dry, but was just about useable



Elfin-Ford used to test the salt's grip with similar tyres to CN7. Driver Andrew Mustard wanted to be a reserve pilot for Bluebird but was himself a source of friction...





In the high-speed runs the salt's surface broke up, damaging the treadless Dunlop tyres on their 52in wheels and restricting the speeds achievable

Bluebird's designer Ken Norris (in red) and long-time Campbell linchpin Leo Villa (in cap) pose between Bristol and Dunlop crewmen



Readers can view the whole collection of images at the National Motor Museum picture archive, which you can visit www.motoringpicturelibrary.com

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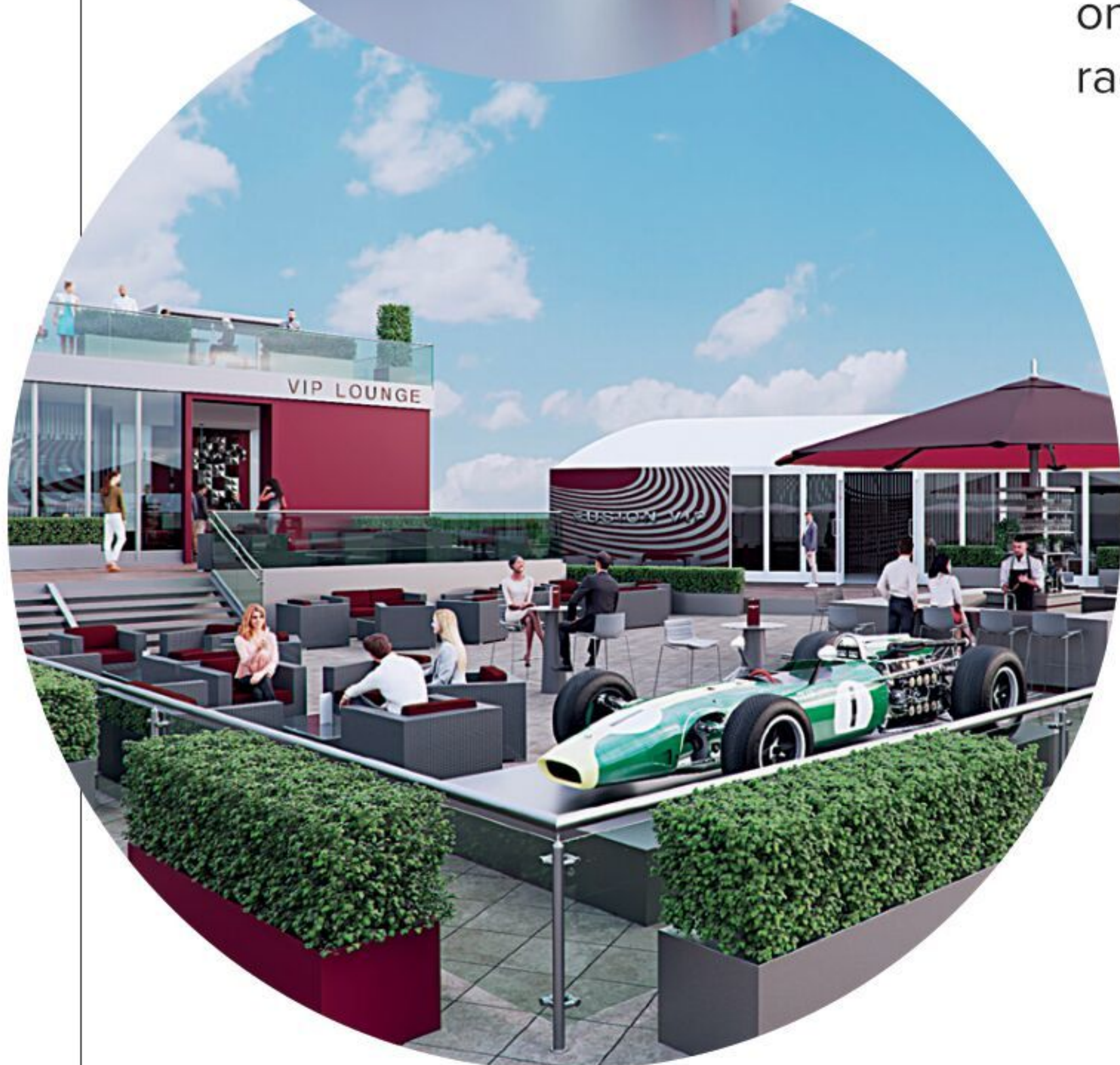
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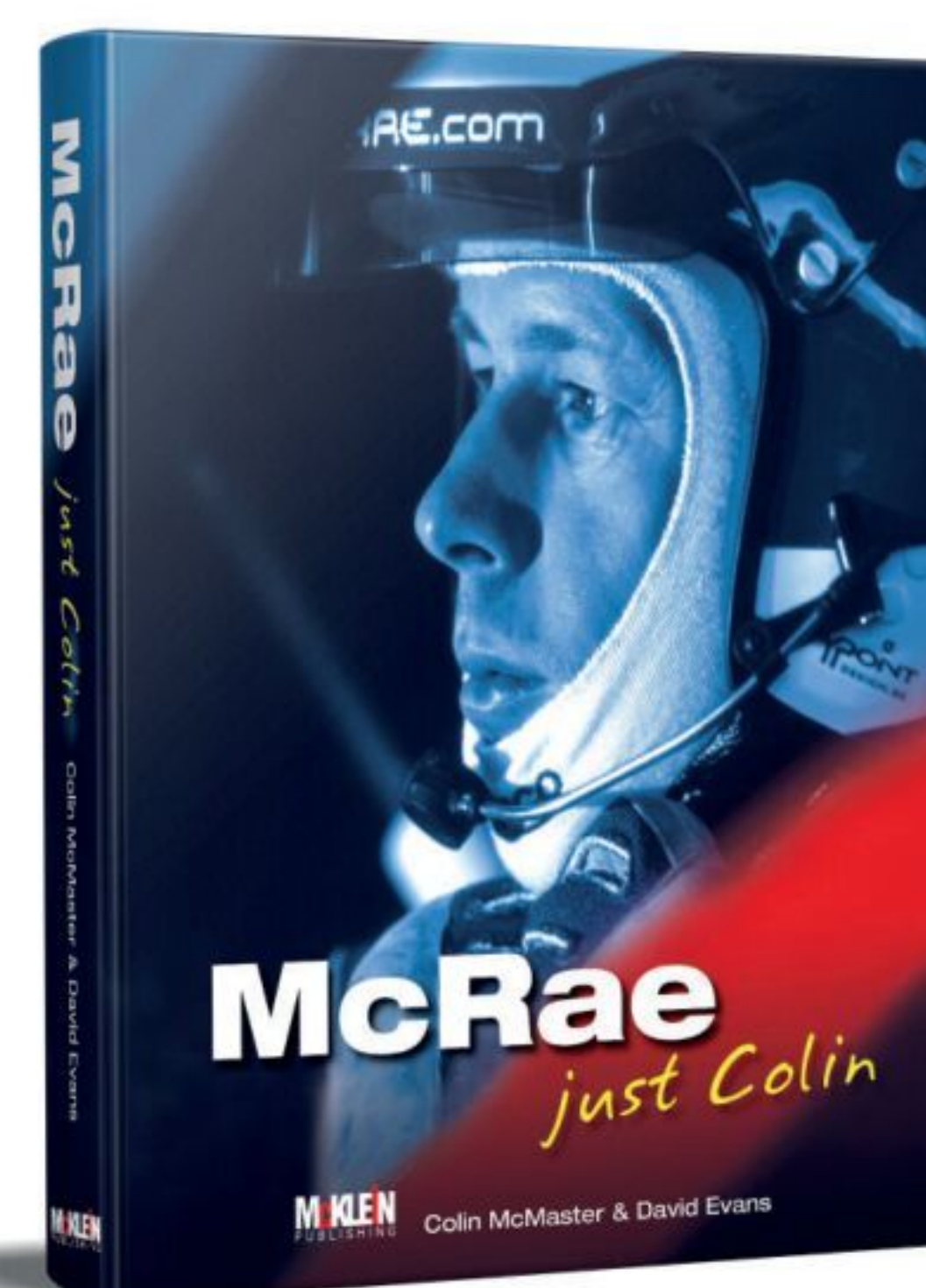
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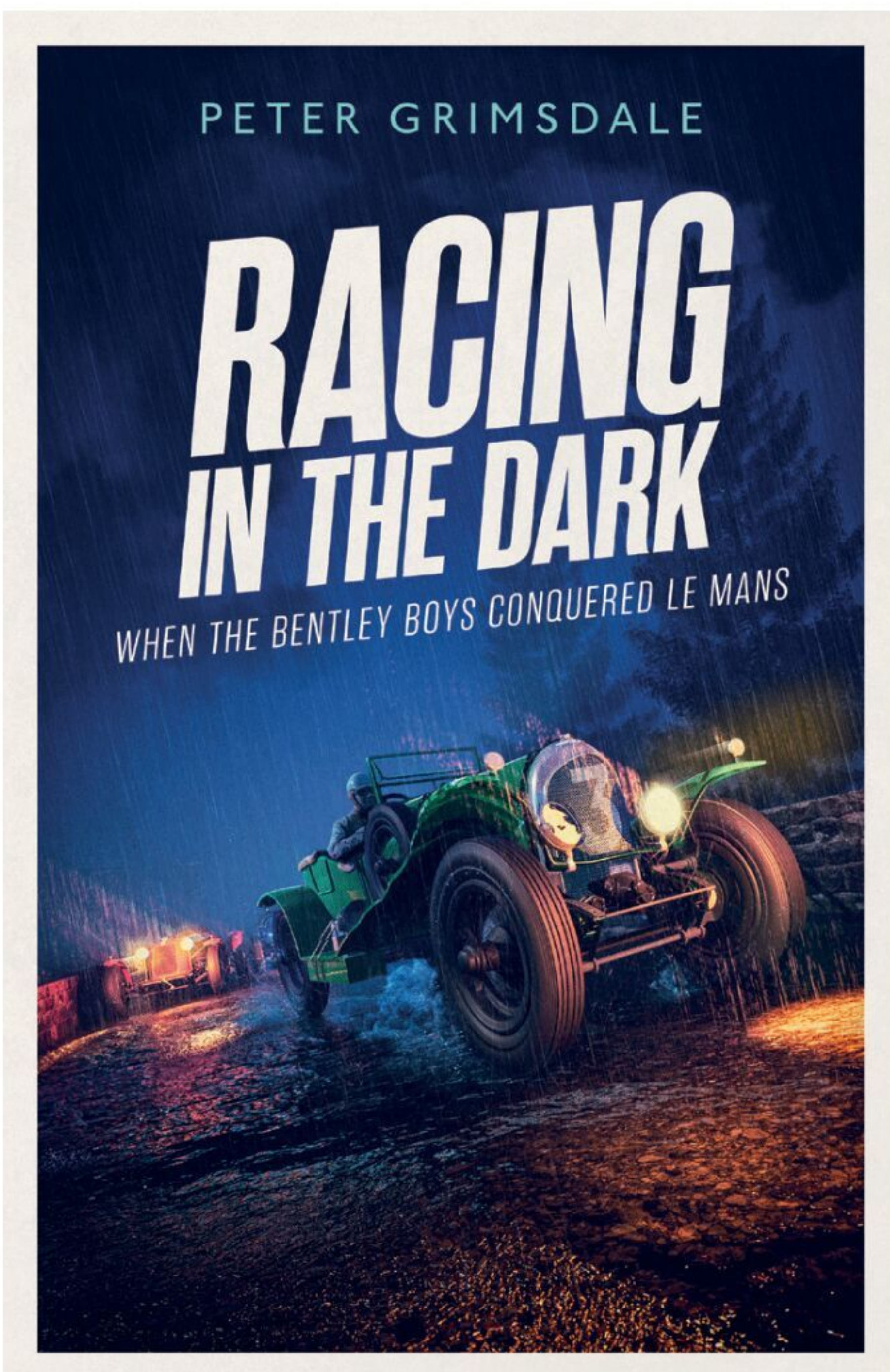
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Staff picks

Three of our editorial team reveal the goodies that top their wants list



LEE GALE, CHIEF SUB-EDITOR

Suixtil Nassau knitted polo shirt

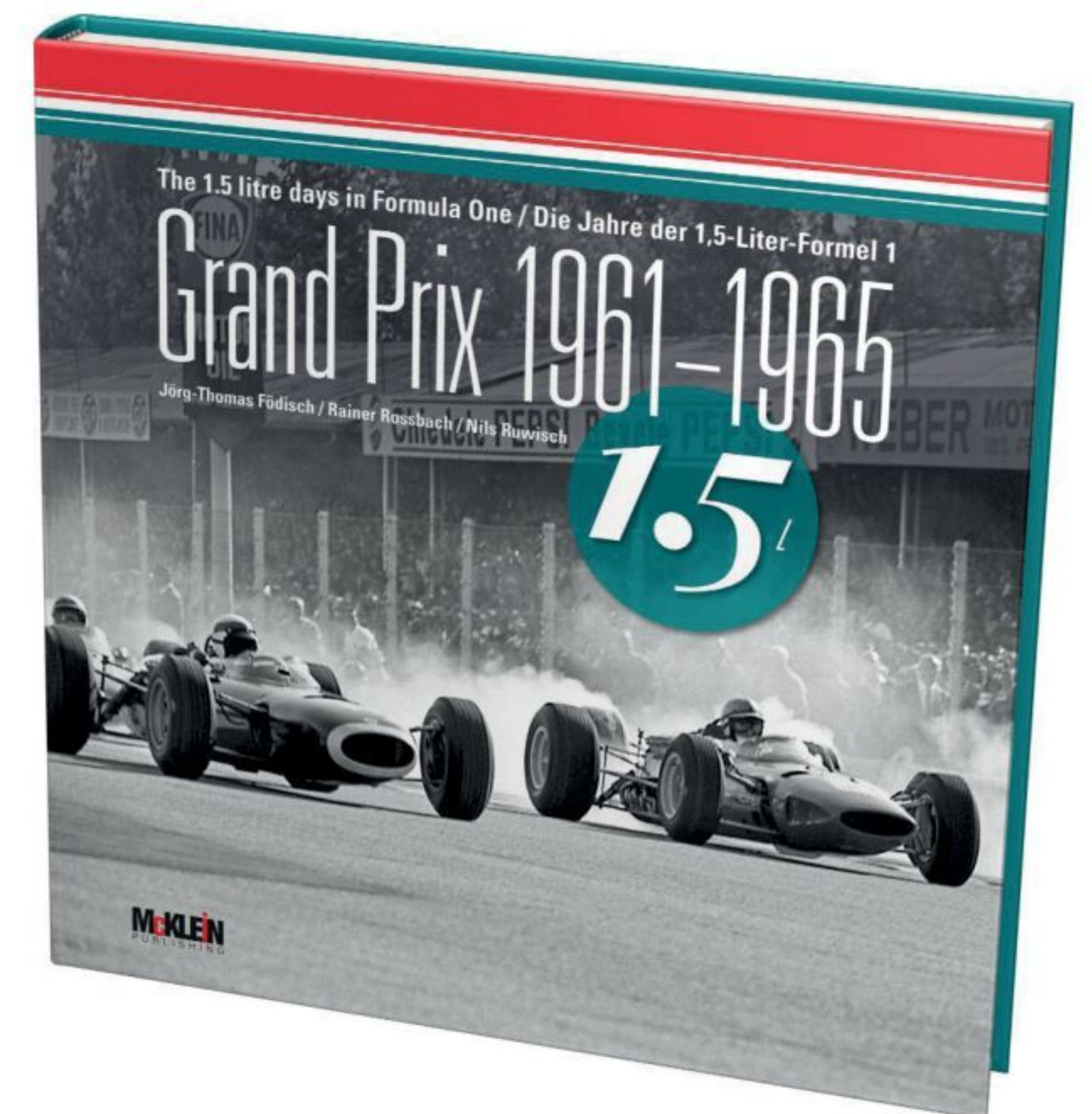
Available in gold, white, navy and pale blue, the Suixtil polo was worn by a panoply of drivers in the 1950s and '60s, including Moss and Fangio. I'm a fan of a knitted tee, Fred Perry usually, and this is an absolute beauty. Suixtil dates back to 1930s Buenos Aires and the gentlemen's outfitter Salomon Rudman. He was a motor sport nut and his wares were a paddock hit. I spoke often about this top before Christmas and not a dicky bird. C'mon kids or the internet gets switched off. **£85**



DAMIEN SMITH, CONTRIBUTOR

Martini Porsche Le Mans 1971 print

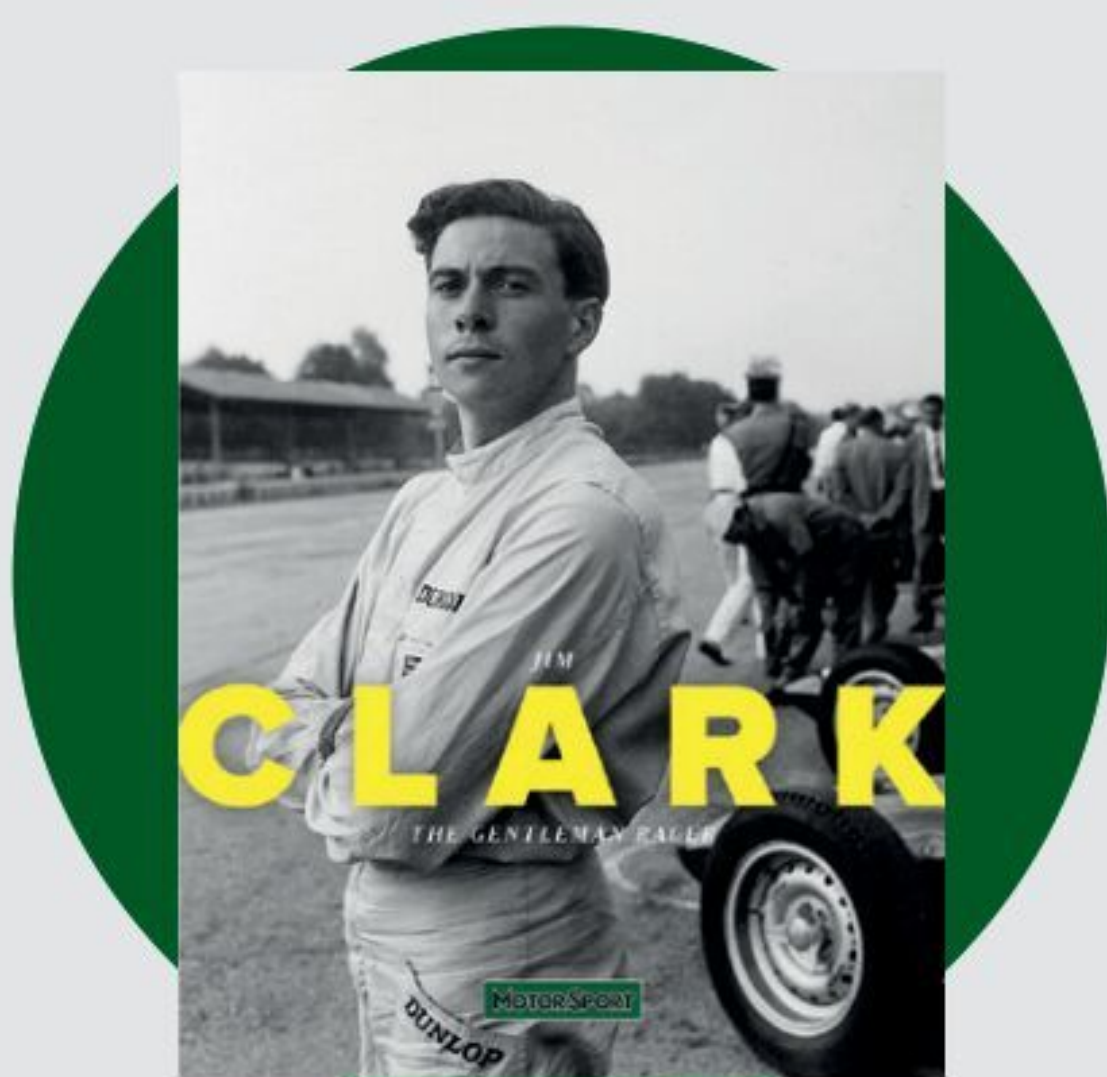
Royal College of Art graduate Ian Bilbey is a classic car enthusiast and competing member of the Vintage Sports-Car Club who produces a striking line of stylish, graphically inventive posters and artworks. His range of Porsche 917 art, taking full advantage of the memorable period liveries, particularly caught our eye. The works are hand-drawn (even the text and car graphics) and are produced using the giclée (spray) ink jet printing process. **£125**



SIMON ARRON, EDITOR-AT-LARGE

Grand Prix 1961-1965 book

This was a charismatic era, ripe with human interest, even if the 1.5-litre grand prix cars lacked the presence and dynamism of their more potent antecedents. It was a wonderful period for photography, too. The circuits remained raw, lined by natural hazards rather than steel rails and debris fences, and focal lengths tended to be short, so many of the images are part-landscape, part-sporting drama. It's expensive but a substantial chunk of McKlein book for the money. **£205**



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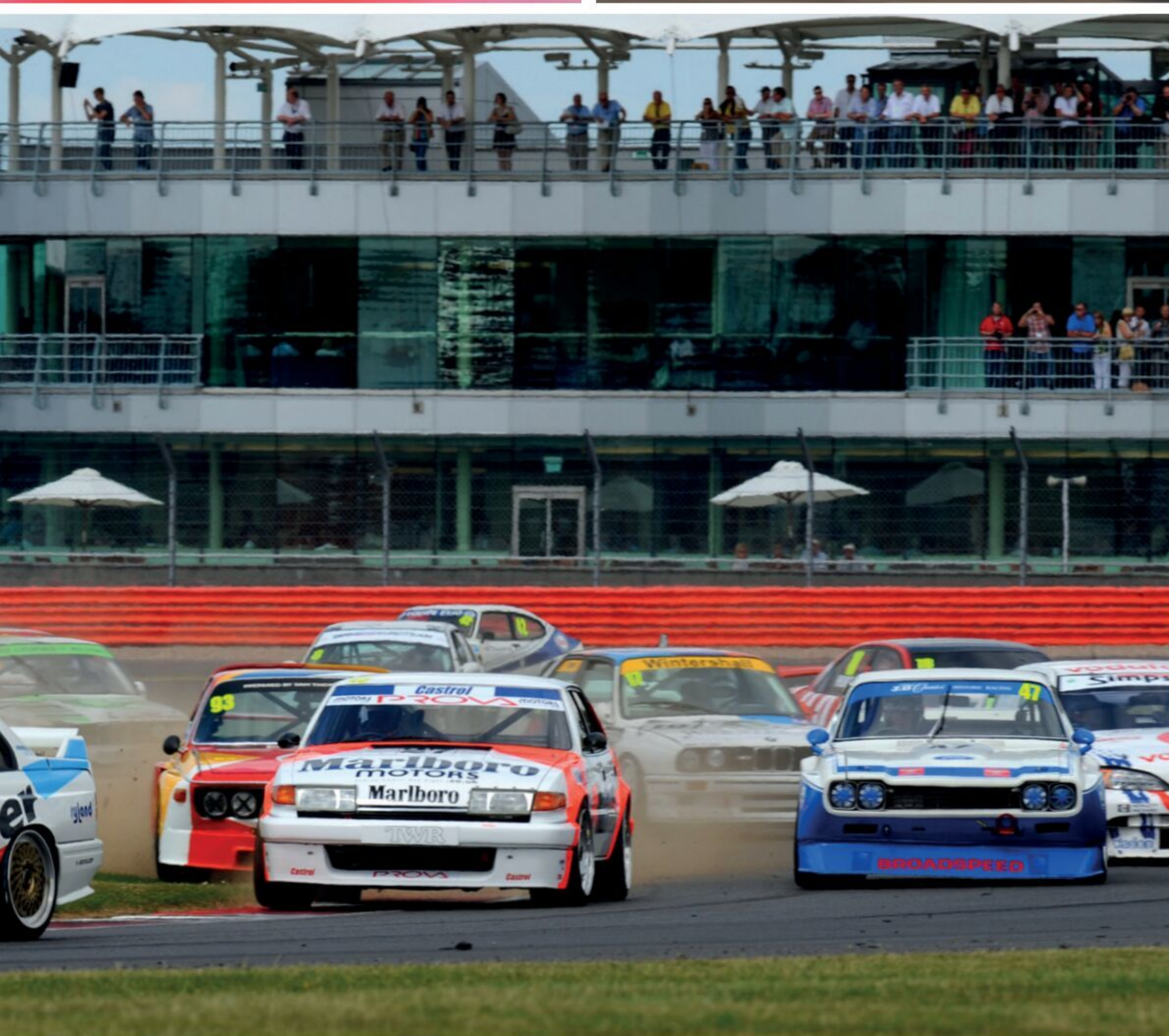


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THE SHOWROOM

BUYING, SELLING, AUCTIONS, MEMORABILIA

With its very clean lines, this Vignale 340 is desirable today – but there were no takers in Colorado in 1952



DEALER STAR CAR

The hard to shift Ferrari

When this Vignale 340 America first hit the showroom, no-one wanted it. That's not the case now, says **Simon de Burton**

HOW DO YOU LIKE YOUR CLASSIC Ferraris? If the answer is open-topped with clean lines, zero frills and a stonking Lampredi V12 under the bonnet, then this delightful 340 America from 1952 should fit the bill.

But not only is this Vignale-bodied 340 lovely looking, it also has a full and fascinating history having been brought to the US when

new by Ferrari importer Luigi Chinetti and displayed at the New York Auto Show before being loaded onto a Douglas DC-6 cargo plane and flown to Denver.

The car must have caused a sensation, both because of its exotic appearance and the fact that it was the very first Ferrari to arrive in Colorado state, where newly appointed marque representative George Joseph Jr put it up for sale for a strong \$20,000.

It's fair to say that buyers were not queuing up and, after a price drop to \$18,000 failed to shift it, Joseph ended up financing the 340 to local dirt-track racer Johnny Mauro when it was still only months old.

Mauro raced the car a few times and, so it appears, loaned it to other drivers, including James Donald who subsequently bought it in 1954, crashed in it twice and kept it until 1960 – when he moved it on for just \$5000. ➤



Unlike most Vignale designs of the time it has no trademark 'portholes'

It's difficult to comprehend now, but the car's value simply kept on falling throughout the decade to the point that, after passing through the hands of three further owners, it sold again in 1967 for \$2500 before eventually ending up being stored in a California workshop wearing a tatty coat of black paint.

But by 1980 the value and rarity of such cars was becoming appreciated, and it was bought by California marque aficionado Gil Nickel who had it fully restored and re-painted in 'Giallo Fly' before enjoying it for 23 years, driving it as it was always intended to be driven in events such as the Mille Miglia (three times), the Monaco Historic, the Monterey Historic and the Colorado Grand.

The car also picked-up awards at top shows including Pebble Beach and the Emilia-Romagna concours, helped by the fact that it is one of five 340 Americas to carry similar Vignale bodywork, but the only one to have

been specified from new with recessed tail lights and without the coachbuilder's signature 'portholes' on the front wings.

It was also fitted with thin chrome side strips along the side of the car from the rear wheel arches and, particularly unusual, parking lights left and right, just forward of the windscreen - features that are today absent.

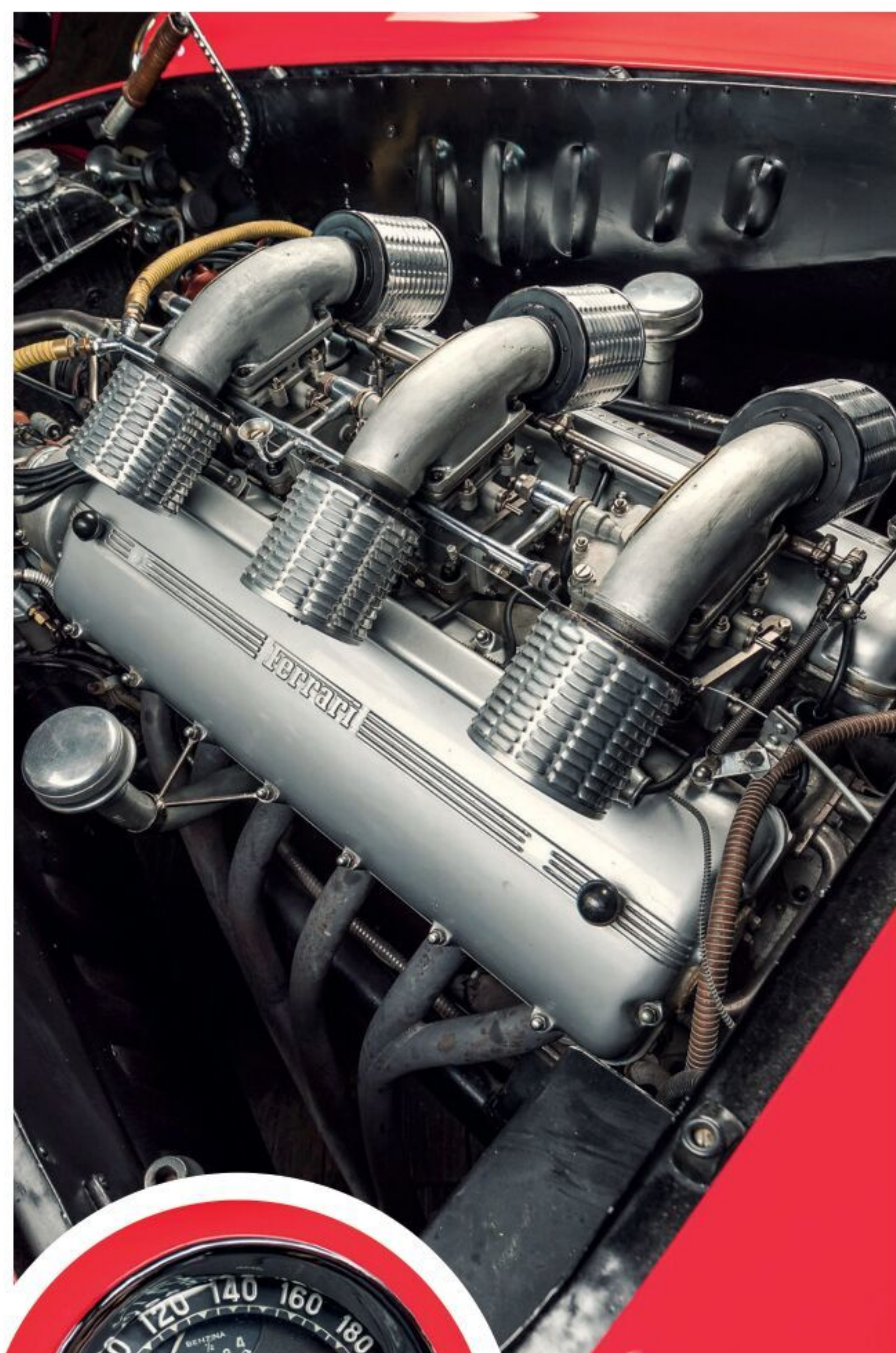
Back in its original red livery, the car has formed part of a 50-strong collection of competition Ferraris for the best part of a decade, but is now up for grabs for a price that will be revealed 'on application'.

To give you a clue, though, add a couple of noughts to Joseph's original price, multiply by three and a bit, and you might be near...

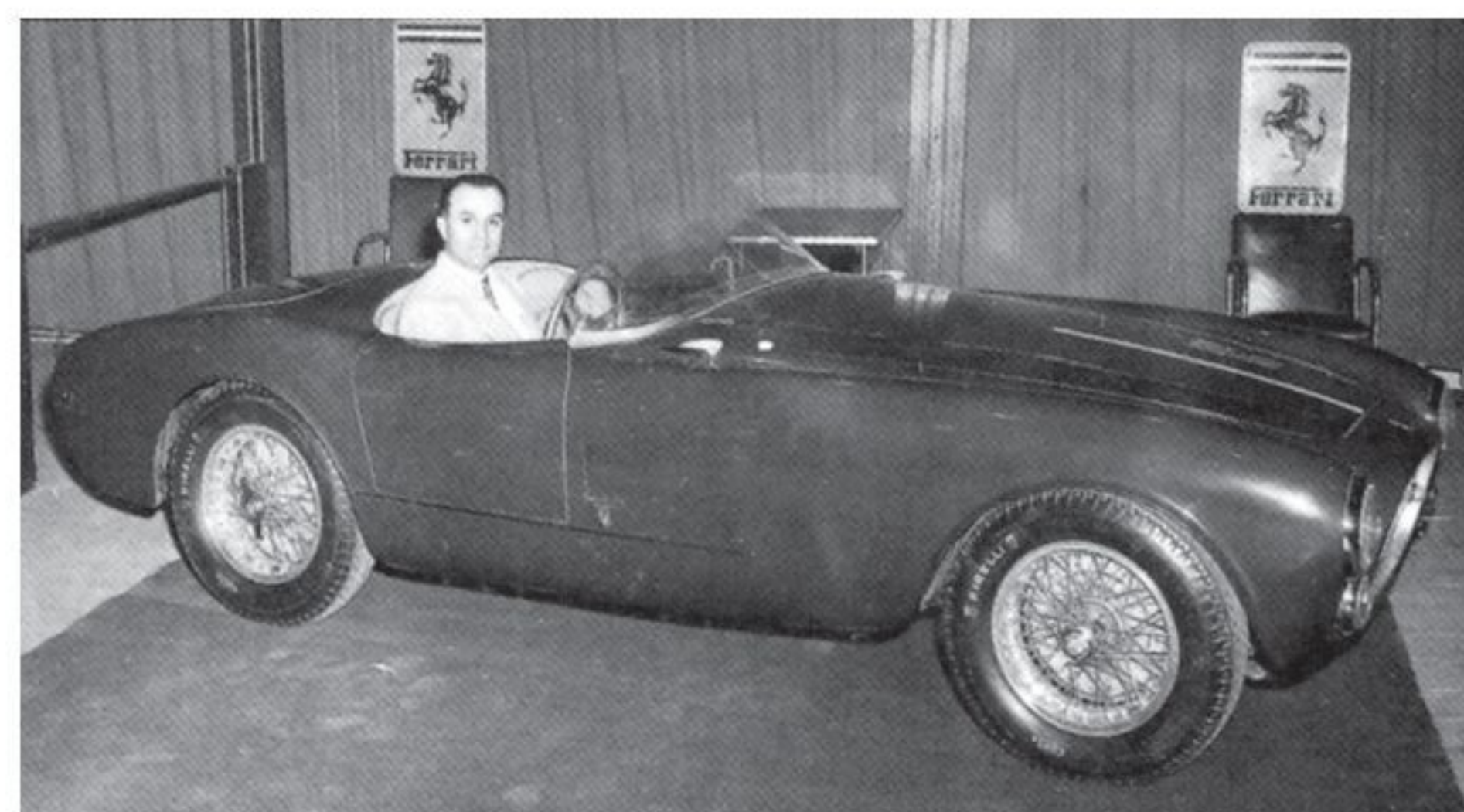
1952 FERRARI 340 AMERICA SPIDER

On offer at Copley Motorcars, 37 Chestnut Street, Needham, Massachusetts.

Tel: +1 78 1444 4646, copleymotorcars.com



Lampredi's 4.1-litre V12 made 280bhp – not to mention a glorious noise. The car's history is known from early years, below



DEALER NEWS

Well-oiled – the King of Cool's V8 Volante

● "If you drink, don't drive – don't even putt," cracked Rat Packer **DEAN MARTIN**. In 1979, *The Cannonball Run* star, whose vanity plate was once 'DRUNKY', was the first owner of an **ASTON MARTIN V8 VOLANTE CONVERTIBLE** that's now on sale (\$POA) at **AUTOSPORT DESIGNS** in New York. That's *amore!*

● **PORSCHE CENTRE PRESTON** has become the

first location in the country to install ultra high-speed charging points. In just five minutes, the **CBX 150kW CHARGER**, below, can give a Taycan power for 60 miles – enough to get you to Halifax. "It's a



glimpse into the future of electric motoring," said centre principal Tom Fox.

● A myth-busting mission by the **GOVERNMENT, AA** and **ELECTRIFYING.COM** reveals that many of us are still in the dark about EV incentives: 63% had not heard of the plug-in grant. "This is why we're investing up to £2.8bn to drive the switch," said transport minister Rachel Maclean.

● The £2m **PININFARINA BATTISTA EV** might soften your resolve to remain on first-name terms with Esso-station cashiers. **JARDINE MOTORS** has been appointed official Battista dealer for London and the South. "We will tailor an experience to the client's requirements, which includes a trip to Automobili Pininfarina in Cambiano," says comms manager Victoria Healy.

● A Barnato Green **2012 BENTLEY MULSANNE** formerly owned by **THE QUEEN** has been sold by **BRAMLEY MOTOR CARS** for £178,000. Her Majesty used the Bentley, which carried the reg DK61 FHM, for Diamond Jubilee duties and visiting the PM at No10. We're unable to verify whether a 'Little princess on board' sign for use on the rear window was part of the package. **Lee Gale**



1959 Lister Costin - BHL135

£POA



1975 Kremer Porsche 911
Carrera 3.0 RSR

£POA



2015 Ferrari 458 Speciale
Aperta UK RHD

£475,000



1960 Aston Martin DB4 GT
Recreated

£POA



2006 Ferrari 430 Challenge
Racecar LHD

£79,950



2018 Ferrari 488 Spider

£184,500



2016 Bentley GT V8S Mulliner

£84,950



2009 Ferrari 430 Scuderia
16M Spider LHD

£275,000



2021 Audi RS4 Avant 2.9 TSFI

£63,950

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PE2

195/60VR14
MXV3





Built by an enthusiast, this replica Group B rally car is more drivable than its 3-litre inspiration

AUCTION HERO

Almost, but not quite

It's a Metro, but not as we know it. **Simon de Burton** explains why this apparent 6R4 rally car won't shred your ears like the original

IF YOU'RE OLD ENOUGH TO REMEMBER Tony Pond powering his MG Metro 6R4 to a heroic third place in the 1985 Lombard RAC, you're likely a fan of what must surely be one of the most unexpected, exciting and imaginative rally cars in history. Not to mention one of the shortest-lived and largely unsuccessful (in period, at least).

In hindsight, the Metro 6R4 appears to have been the result of a bizarre aberration on the part of Austin-Rover's board who, in 1981, gave Motorsport division boss John Davenport the green light to develop an all-new rally car.

Such was the enthusiasm that Williams F1 was tasked with creating it, a job led by chief designer Patrick Head and top engineer John Piper. Between them they came up with a monocoque chassis designed to hold a bespoke rear-mounted engine with a gearbox driving all four wheels.

Delivered to Austin-Rover at the end of 1982 for final development, the prototype had a 3-litre V6 engine by the time it was unveiled 14 months later. Following the completion of the extreme bodywork and that cartoon-like 'aero package' the car was sent into battle in the frantic Group B in early 1985.

It achieved few good results; yet by the end of the following year, with the Group B category banned and Austin Rover out of rallying, the 6R4 had nowhere to go. The remainder of the 200 £40,000 Clubman specification cars built for homologation purposes would be sold off for as little as £13,000 apiece.

They now fetch around £200,000, with surviving examples of the 20 'international spec' versions fetching £300,000-plus. But if you fancy the look for less, how about this impressive 'homage' on offer at CCA for around a tenth of the price?

Meticulously built over a four-year period by an amateur enthusiast, it features a rear-mounted 1.8-litre twin-cam engine from an MG TF sports car, a five-speed gearbox and rear-wheel-drive only.

A full rollcage, race seats, harnesses and a fire extinguisher compete the picture and, with a recently issued Individual vehicle Approval (IVA) certificate, it's running and ready to go.

MG METRO 6R4 'TRIBUTE'

On sale with Classic Car Auctions, London, June 26. classiccarauctions.co.uk

FORTHCOMING SALE HIGHLIGHTS

● SILVERSTONE AUCTIONS, NORTHAMPTONSHIRE, JUNE 5

This special sale of Ferrari cars on National Ferrari Owners' Day will feature a host of models from all decades of the marque. Already consigned are a 2011 599 GTO, a 1979 Berlinetta Boxer and a 1972 365 GTB/4 that once belonged to Sir Elton John.

● H&H, SOLIHULL, JUNE 9

H&H returns to the National Motorcycle Museum for another blockbuster sale dedicated to two wheels. Among the more remarkable offerings are two pre-war bikes consigned by the same long-term owner, a 1937 Indian Four (owned 54 years) and a 1920 NUT TT model (owned 59 years).

● RM SOTHEBY'S, MILAN, JUNE 15

With the annual Concorso d'Eleganza at Villa d'Este now postponed until October, the event's regular auctioneer RM Sotheby's has established this new sale in Milan on the eve of the (also re-scheduled) Mille Miglia. Around 30 cars will be offered in the courtyard of the historic Palazzo Serbelloni.

● RM SOTHEBY'S, LIECHTENSTEIN, JUNE 19

This single-owner collection dedicated to Rolls-Royce and Bentley cars features 25 prime examples spanning 88 years of production. All will be sold without reserve - with the final lot of the sale being a Rolls-Royce Merlin engine as fitted to the 1940s de Havilland Mosquito.



AUCTION PICKS

Single-seater simplicity

Long before Formula Ford there was Formula Cisitalia, says **Simon de Burton**

1947 CISITALIA D46 MONOPOSTO
SOLD BY BONHAMS, £137,000

Piero Dusio's Cisitalia D46 was developed as an affordable means of entry to a series of competitions intended to revive single-seater racing in Italy and Europe after the war. Designed by Dante Giacosa, it had an advanced spaceframe chassis and was powered by a Fiat 1100cc engine, tuned for reliability and cheap maintenance. In period, this example took part in the Grand Prix de Bern, then stayed in the same ownership for more than 40 years before being bought by the vendor and restored. Although fitted with a race engine, the original also came with the car.



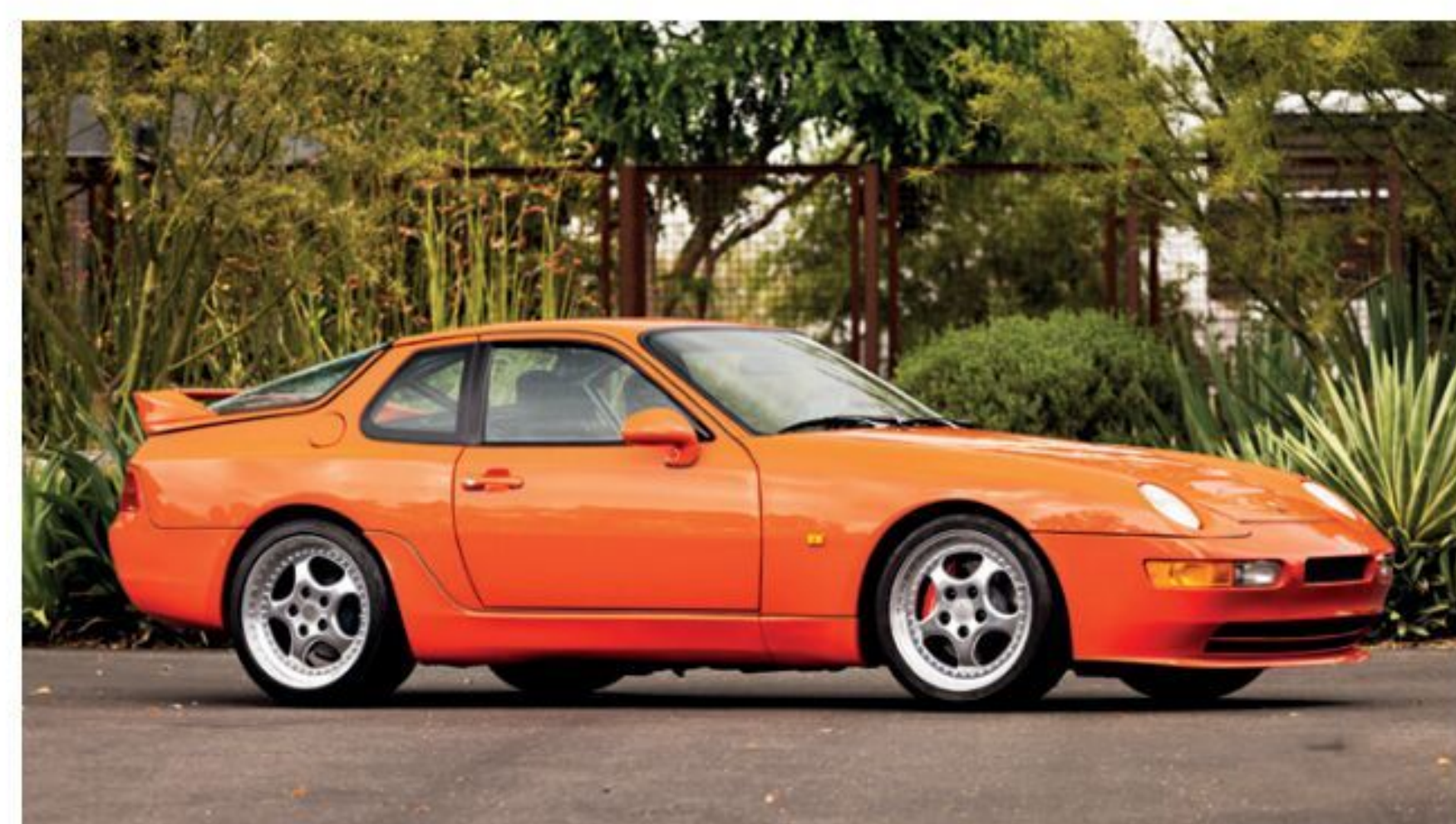
1954 JAGUAR XK120
SOLD BY HISTORICS, £95,200

This XK120 was stripped before a rebuild to 'fast road' spec by Jaguar tuner Guy Broad. A big-bore exhaust, rally spotlights, extra bonnet louvres and a Le Mans-style fuel cap help it to look the part.



2018 BROUGH-SUPERIOR SS100
SOLD BY COLLECTING CARS, £23,500

This modern-day Brough had covered 74 miles from new – and depreciated by an eye-watering £36,500 in less than three years. That works out a price per mile of £493.24 (plus petrol, of course).



1993 PORSCHE 968 TURBO S
SOLD BY GOODING & COMPANY, £657,000

If you don't find a 911 2.7 RS rare enough, how about a 968 Turbo S? A mere 14 of this 175mph road version of the Turbo RS competition car were made, and just two in dazzling 'Blutorange'.



1949 GEORGES IRAT SPORTS TWO-SEATER
SOLD BY BONHAMS, £62,000

Exhibited at the 1949 Salon de Paris, this unusual prototype never made production, but the bare body of this one was later found at the factory and fitted with Simca running gear.



1968 MEYERS MANX.
SOLD BY GOODING & COMPANY, £49,300

With the Meyers marque set for a major revival, interest in originals is soaring. Built in 1968, this one was disassembled and placed in storage for decades. The vendor spent 13 years restoring it.



1970 FORD ESCORT TWIN CAM
SOLD BY HISTORICS, £63,840

This works rally car was driven by Hannu Mikkola at the 1970 Cyprus Rally and later, in a non-competitive context, by Roger Clark. Sold by Ford in 1972, it retained its registration and log book.



1930s BUGATTI WATCH
SOLD BY STANISLAS MOUCHOIR, £235,000

This gold Bugatti watch belonged to Ettore Bugatti himself. It was handed down to his son, Michel, who fitted the unique gold bracelet and wore it for several years before parting with it.

COLLECTINGCARS, DENNISNOTEN.COM/BONHAMS



THE INSIDE LINE

"Bonhams has acquired The Market lock, stock and proverbial barrel"

AS SOME READERS MAY know, the past month has been an interesting one for us at The Market. That's because the ladies and gentlemen at renowned auction house Bonhams (founded 1793) recently acquired The Market auction platform (founded 2017) - lock, stock and proverbial barrel.

And while that elicited a great big huzzah from us, I'm not quite reaching for the pipe and slippers yet. In fact none of us are, for it remains very much business as usual at our headquarters.

So, how did it happen?

Bonhams first approached us in February. It'd been in the process of overhauling the business and became aware that some of its digital offerings were perhaps not quite as sharp as they needed to be.

In a direct reflection of the classic car market itself (my last article discussed the charge of the modern classic brigade) it cast its eyes to what the newcomers - 'youngtimers' as the Europeans call them - were doing. The rest, as they say, is now history.

The deal itself is recognition that we (along with other digital players) have, for some time, been encroaching into the 'normal' auction world. Disruption has been the name of the game; fresh approaches, including better quality presentation and an improved marketing reach (using the digital approach of social media, email and apps) have facilitated a distinct shift in the car-selling world.

Bonhams also realised that we've made inroads into a classified ads market that's quite clearly suffering; that's not been surprising in itself during Covid, but the format (six home-shot photos and

owner-written descriptions) and styling have long been in need of a revamp. In addition to this, a number of smaller scale dealers have also switched to just using us in order to bring their cars to market.

So what about the future?

The Market's new owners have recognised the imperative need for us to maintain our current operations and ethos. Having said that, like our new owners, we're not anticipating the demise of top-end, big-venue auctions; there's undoubtedly a place for the wining-and-dining, competitive and very attractive big-ticket events.

For us, I'm most excited about funding that will allow our brand to go zooming off into other territories (Europe first!) with credibility - if it's good enough for a major player like Bonhams, then it's good enough for you. It will help to

accelerate our progress and broaden our boundaries. There's no doubt that the combination of our digital expertise and Bonham's heritage will allow us to take things to the next level.

People's habits were fundamentally changing prior to the pandemic and

it only accelerated that progress; things like shopping deliveries, dinner-party meals direct to your door, the all-conquering Amazon sending out multitudinous parcels 24/7... there have been seismic shifts in how the world operates, and we've been proud to be a part of that.

Back in the 1980s a chap called Gordon Gecko suggested that "greed is good". He was wrong: change is good.

Tristan Judge is director and co-founder of The Market, the online auction platform for classic and collectible cars

"We're not anticipating the demise of top end, big-venue auctions"



Ben Horton has seen the motoring book market change radically – but books still furnish a room

Print retains its power

Predictions of doom for the physical book are proving to be very wide of the mark, as **Gordon Cruickshank** discovers

HAVE YOU NOTICED ON ZOOM interviews how often the background is a wall of books? Despite Kindle and its fellows there's nothing like picking up a real book and flicking through the pages. That's echoed by Ben Horton of Hortons Books when we talked about collecting books old and new.

"The book market is in rude health," Ben thinks. "Four or five years back people were worried about the arrival of the e-book, but I think that was a fad. People have realised that reading from a screen doesn't have the same involvement. Sensory things happen with a book. The ship was turning in that direction prior to the pandemic - Mark Zuckerberg once said books were cool and that Christmas there was a sales spike. Another point is that in lockdown people are spending all day at a screen and are turning to books as a relief. People who have never picked up a book are doing so now, and I think that will carry on when we come out of lockdown."

Hortons Books carries both new books and collectors' items - Ben reckons 70% of his stock is out-of-print titles. What would he cite as cornerstones of a motoring bookshelf?

"In driver biographies," says Ben, "Innes Ireland's *All Arms and Elbows* of course, *Touch Wood* by Duncan Hamilton, *James Hunt* by Gerald Donaldson is excellent, and Sid Watkins' *Life at the Limit* is fantastic. Birkin's *Full Throttle* is one of the great motoring books. In technical works, Laurence Pomeroy's *The Grand Prix Car* is out of favour now, but it's still incredible. For myself I like photographic books. I would always want a copy of Jesse Alexander's *At Speed*: it mixes art and photography wonderfully."

Of course fashions shift even with old books. The 2017 documentary about Bruce McLaren triggered interest in his autobiography *From the Cockpit*. "That film and the new road cars have brought the name to a new

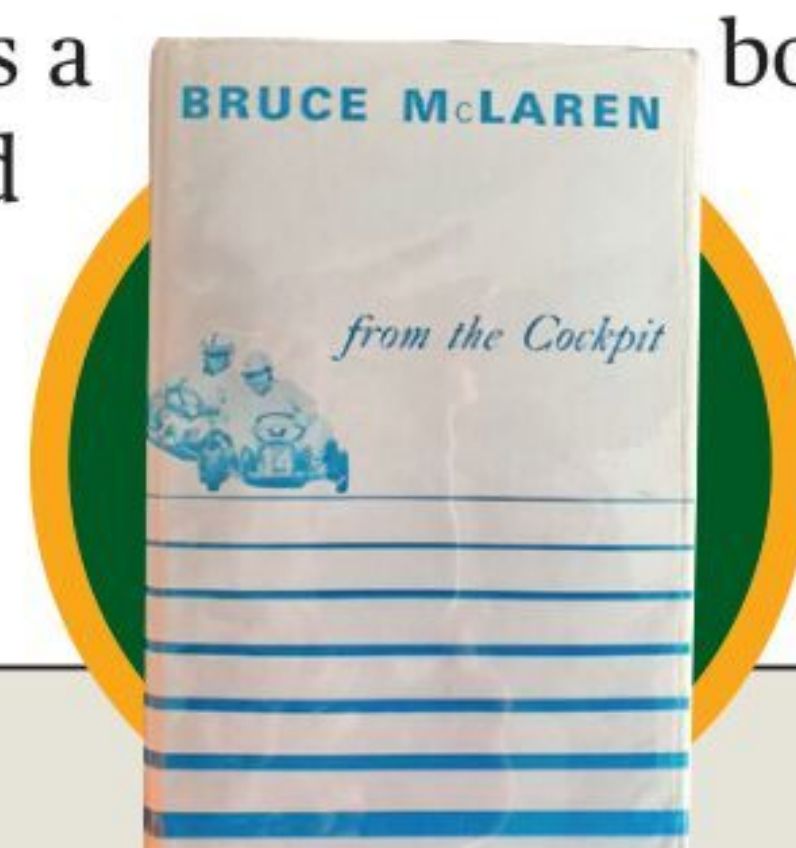
generation who may not have known about his racing. Evro did a facsimile edition - I thought it was a daft idea but they're sold out already! An original copy with a nice cover could be £70-£100, though I have in the past sold one signed by Bruce in the high hundreds."

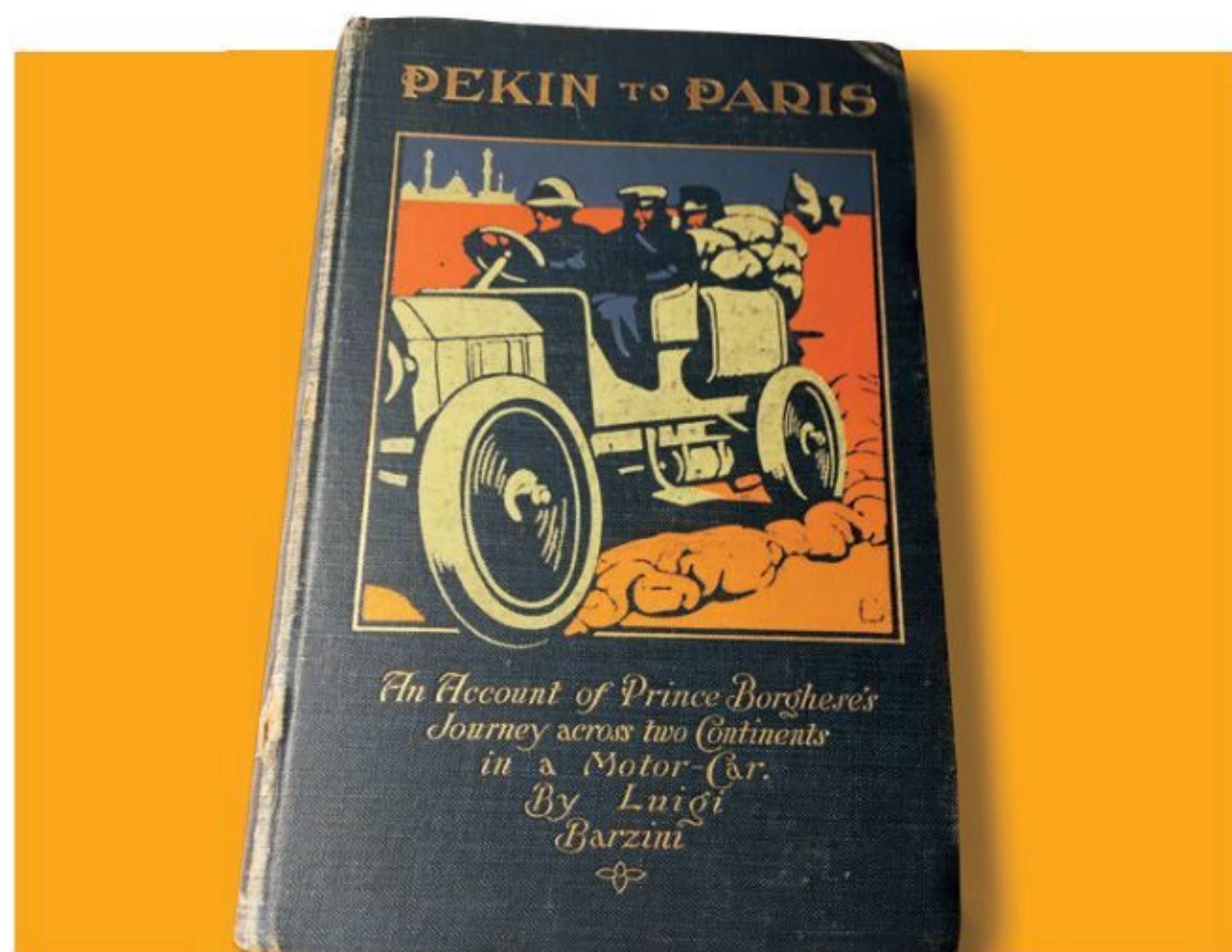
Popular books were once likely to be re-printed making a cheap 'reading copy' easy to find second hand. Not so now, Ben says.

"I love to find old copies being sold from the back of an estate car"

"The lavish editions we are seeing now are becoming art pieces in themselves. Runs are shorter: the standard version is likely to be limited with the luxury edition printed in just handfuls, so both sell out quickly and prices rise. Take the Simon Kidston Miura book: you could buy that last year for £500. Now it's selling for £4000 and upwards. The days are gone when a publisher would print 10,000 copies which might sit in a warehouse for years. But it makes people buy the books quickly instead of waiting."

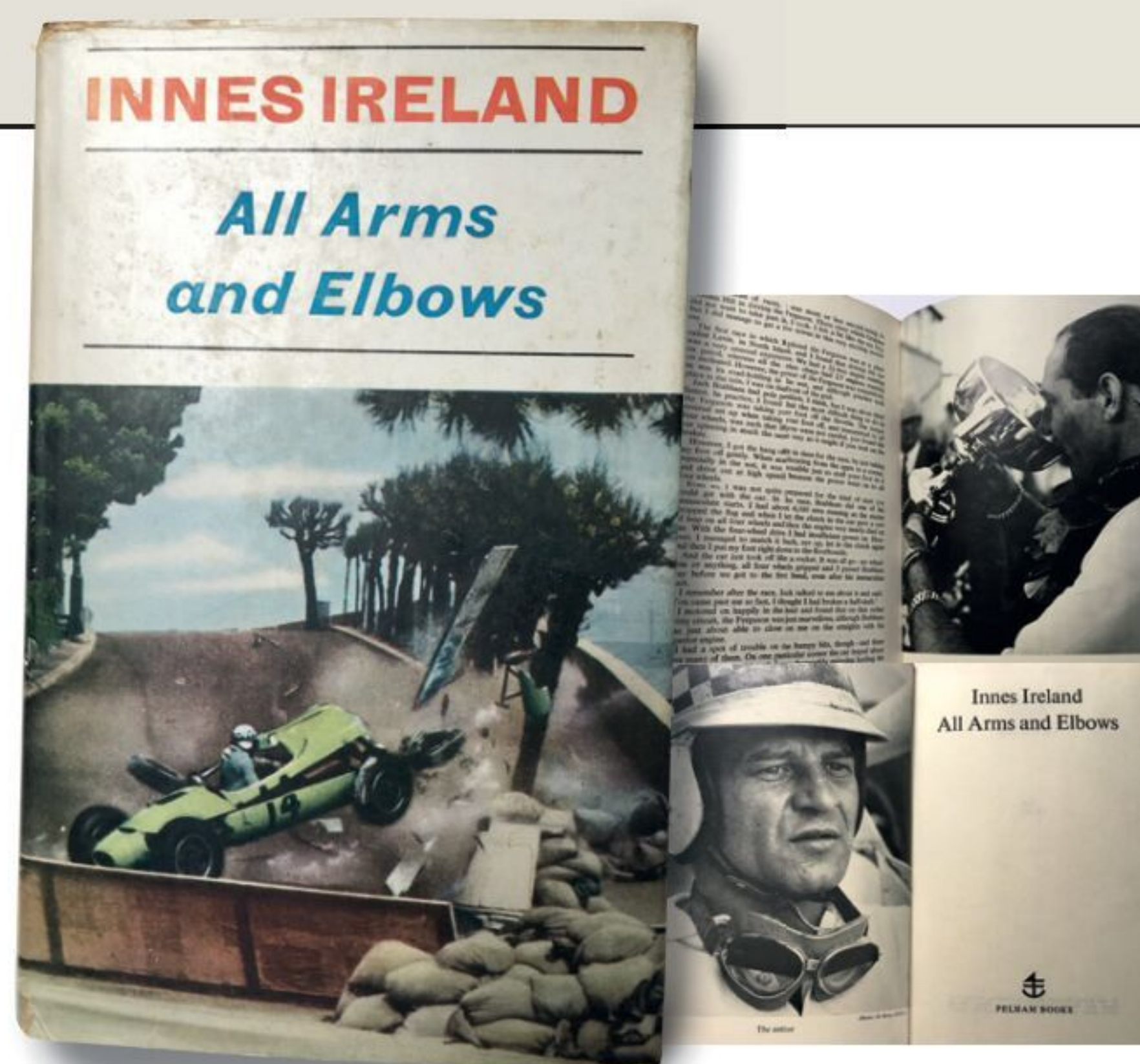
Yet it doesn't have to mean big bucks. "I still love to find old copies being sold from the back of an estate car at Beaulieu autojumble; there is still plenty to find out there."





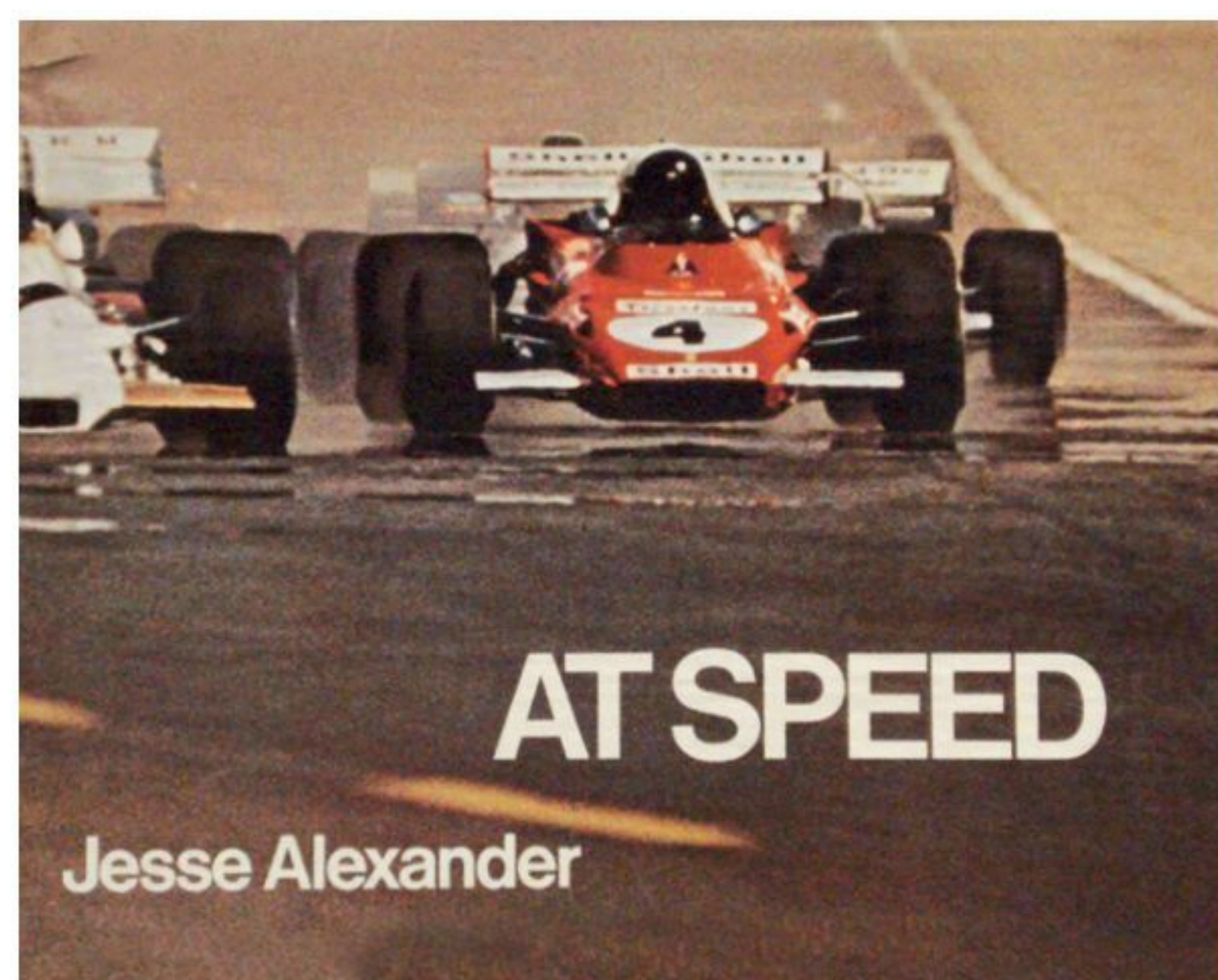
PEKIN TO PARIS BY LUIGI BARZINI

If you've ever had a difficult car journey, read this – you'll never complain again. It's one of the most famous motoring adventures, battling across the Gobi Desert in 1907 in primitive cars on unmade roads or trackless wastes. Author Barzini was co-driver on the winning Itala, and their adventures – falling through bridges, sinking into rivers, endless punctures – are riveting. This 1907 first edition has a lovely cover. A great read and good investment. *Classic Motoring Books, £295*



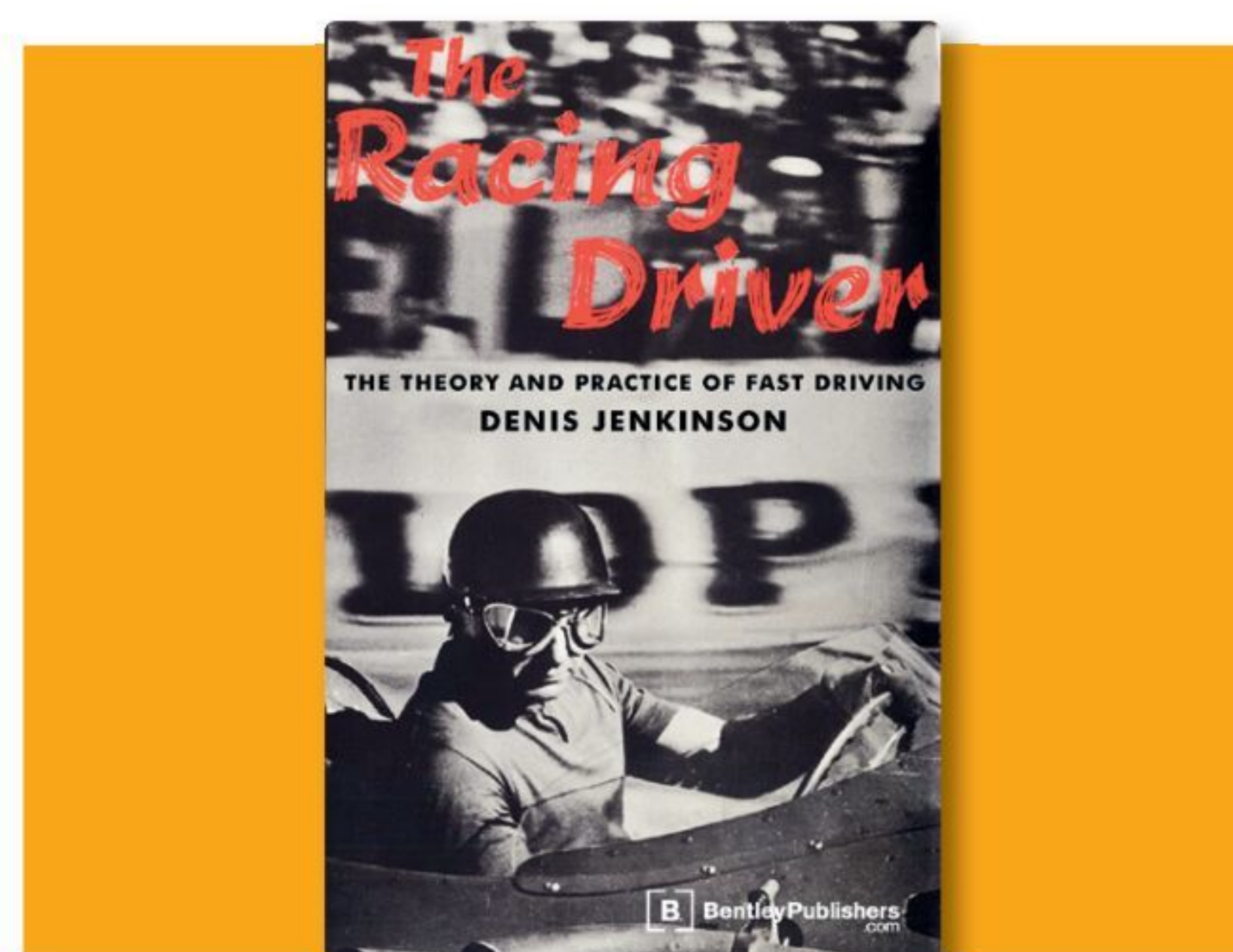
ALL ARMS AND ELBOWS BY INNES IRELAND

Large in stature and in legend, Ireland wasn't shy, as his book tells. Full of great stories about the hell he raised at the tracks along with frank views on other drivers and teams, it's told with real wit. Often cited as the best driver autobiography, it's one every enthusiast should read. This copy is the second impression of the first edition; reissues have more pictures, but it's Ireland's words which are the prize. *Classic Motoring Books, £30*



AT SPEED BY JESSE ALEXANDER

Alexander's photos of racing from the 1950s on made him one of the great names in capturing our sport – not merely a record of cars, teams and drivers but a portrait of the people and the times. Well known to the circus, he had access to pit and paddock and was able to give us a close-up view, presented with a visual flair few could match. Horton's copy is the leather-bound limited edition in slipcase but standard editions are easily found at around £130 and up. *Hortons Books, £1100*



THE RACING DRIVER BY DENIS JENKINSON

Yes, our Denis Jenkinson, whose forthright views on racing and its practitioners found expression in this little volume in which he analysed what made a driver great. Subtitled *The Theory and Practice of Fast Driving*, it describes the qualities a racer needs and compares the styles of those he had watched on track. The names have changed since 1958 but not the skills. Widely available and a 'must read'. *AbeBooks, £10*

MY PRIZED POSSESSION

FERRARI F40 LM MODEL

STÉPHANE RATEL, GODFATHER OF MODERN GT RACING

"I've been fortunate to collect many things since founding SRO almost 30 years ago, but in pride of place in my London office is a 1:12-scale model of the Ratel Ferté Racing Ferrari F40 LM that raced in BPR and at Le Mans with Pilot sponsorship. It's the most successful of all the F40s from the mid-90s. My model is the LM version that raced at Le Mans in 1995. I stumbled across it in a London shop. I don't know who made it, but I had to have it – a happy reminder of BPR's golden era ever since. The actual car recently sold for almost €5m, so if we apply the scale my model's now worth about €400,000 - about what I sold the real F40 for in the late 90s! But I'm not sure if it's a Pilot pen propping the cover up."



THE EXPERT VIEW



Signing on...

When it comes to adding value, a signature can be key, but it can also be tricky: how do you tell if the scribble on any given item is real?

Authenticity, and proving it, is king in this area. From a commercial perspective, when we're having something signed by any driver we will always try and include photo evidence along with the date and place of the signing, for the all-important certificate of authenticity. But even that isn't infallible; we can't take individual photos of every item, but the quality of the signature, our reputation and guarantee, makes it the best in the market.

But it can be tricky for those who love to get an item signed themselves. They'll get a signature from their hero and head home knowing the personal value of that and the memory attached to it. However, try and sell that on and you can have a tough time proving it's authentic. Bundling evidence of the day can help, such as having a friend take a photo of you with the driver in question, or adding in literature to prove you were there that day.



We see many fakes in the signature world, and at the moment Michael Schumacher seems to be the favourite. There are thousands of 'signed' items on the market. Michael must have spent several months just signing merchandise for every item to be genuine...

Experience is key to spotting genuine gems. Ayrton Senna's signature changed hugely across his career, and can be dated by the change in style. NASCAR hero Richard Petty signs almost exclusively in his own markers, which helps make his signed items easier to spot.

Ultimately though, if you have a prized possession signed by your own racing hero and it makes you happy just to look at it, then that's all the authenticity you need.

Andrew Francis is director at The Signature Store. thesignaturestore.co.uk



THE SHOWROOM

Motor Sport collection

Editor's choice

Lewis's Belgian tribute

From art and memorabilia to scale models and books, you will find a hoard of collectibles at motorsportmagazine.com/shop

DAVID JOHNSON ART PRINTS

In a world where every high street shop from TK Maxx to John Lewis is selling racing-themed mass-produced wall art, it can be difficult to find something for your automotive abode that truly stands out. If that sounds like a familiar issue, then look no further than our limited-edition range of prints from artist David Johnson. Captured from Johnson's sought-after originals – created using his palette knife technique – these are transferred on to high-quality art paper via a giclée printing technique. Each print uses fade-resistant Epson inks, so colours will stay vibrant for years to come.

There are a host of designs to choose from, and each comes numbered and signed by the artist himself. Whether you're looking for a powerful image, such as Lewis Hamilton's tribute to *Black Panther* star Chadwick Boseman after his Belgian GP victory in 2020, right, or a signed rarity, like our very limited run of prints hand-signed by Mario Andretti, inset, you can find something that really 'pops' from the range.

From £124.99 (£249.99 Andretti signed)





JABROCK SUNGLASSES

If you're not familiar with Jabroc material, let us give you a run-down. It's a laminated wood made from layers of beech, veneers and resins that is then compressed. But what's it got to do with motor sport? Look underneath a single-seater or sports prototype and you'll find it in the form of a skid plank, rear wing endplate or even sideskirt runners. **£198**



AUTOMODELLO 1937 DELAHAYE 135MS MODEL

Car design these days is so pointy and aggressive. Remember when subtle shapes were used, like curvatures, tear-drops and power bulges? Parisian firm Figoni et Falaschi was a distinctive pre-war coachbuilder, making use of all of the above to style some good-looking projects for the likes of Talbot-Lago and Delahaye. You can still celebrate these designs thanks to Automodello. We'd plump for this 1:24-scale 135MS. **£195**

TONY BROOKS-SIGNED LITHOGRAPHIC PRINT

The eagle-eyed will have spotted that we featured Yves Naquin's written history of the Monaco Grand Prix – *Le Grand Prix Automobile de Monaco, Histoire D'une Legende 1929-1960* – here recently. Together with that tome came a series of lithographic prints, depicting various Monaco races. This is the start of the 1960 GP with Stirling Moss (28) alongside Jack Brabham (8) and Tony Brooks (18). The print is signed by Brooks, and limited to five. **£99.95**



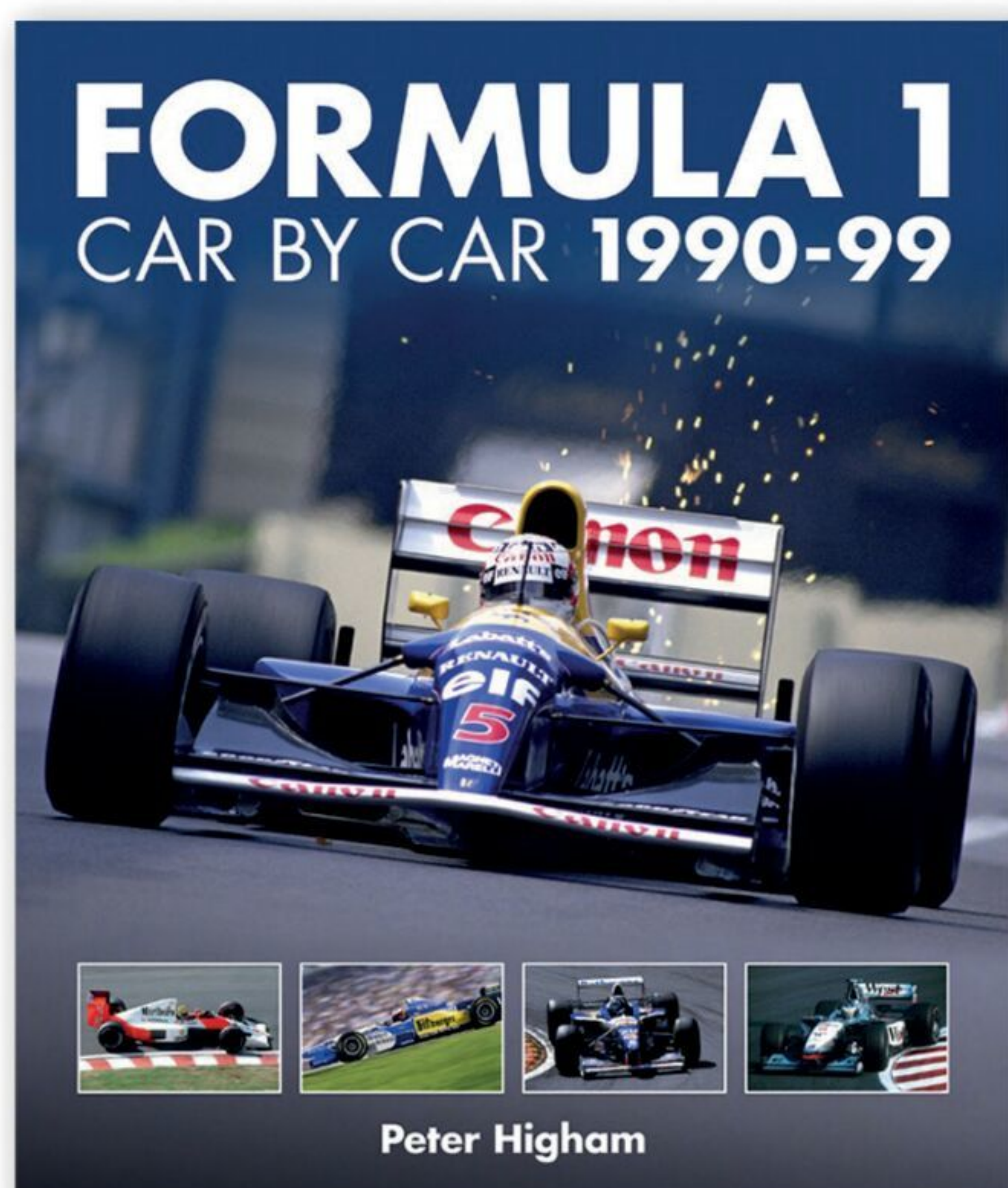
PLAYFOREVER LEADBELLY

We're huge fans of Playforever 'toy' cars, which also make stylish shelf fillers and desk pepper-uppers. Having conquered grand prix machines and sports racers, it's branched out into muscle cars. Display it, roll it around, chuck it about... whatever you do it'll still look fabulous. **£30**



F1 CAR BY CAR 1990-99

Are you a true F1 fan if you don't own at least one volume of this series by Peter Higham? Split into decade editions, the latest version covers the machinery of the 1990s. Each season is treated individually with the cars that populated it, and there's 550 images to pore over covering every car that even attempted to qualify for a GP during the decade. **£50**



ABOUT THE MOTOR SPORT SHOP

With hundreds of special and unique racing-themed products, and many new items regularly added, the *Motor Sport* shop is aimed at both serious and casual collectors with a number of price points to suit your budget. Visit motorsportmagazine.com/shop



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Car number 1 of only 99 examples ever produced worldwide & just 900 miles from new.....**£285,000**



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An award-winning matching number example & 1 of only 258 RHD examples ever produced.....**£395,000**



1963 PORSCHE 356 B 'OUTLAW'

A UK supplied RHD example that has recently been restored & upgraded to 'Outlaw' specification.....**£165,000**



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1930 BENTLEY 4½ LITRE SUPERCHARGED 'BLOWER'

- 1 of only 50 Blower Bentleys produced, of which only 43 remain today
- 1 of only 18 examples that can still boast their 'matching number' status, of these only 7 are fabric-bodied cars
- Regarded as the most original of all the Blower Bentleys
- Fresh from a 5-year, reference point overhaul by marque experts R.C. Moss at a cost of £730,000, wherein the focus was preservation not restoration
- Awarded 'Best in Class' at the 2019 Pebble Beach Concours d'Elegance
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The U2 was named after the Charles Atlas body building ad: 'You too can have a body like mine'



BUYING GUIDE

Power to the people

Racing tracks might be the preserve of the rich but the U2 gave access to the less well-heeled, says **Robert Ladbrook**

MALLOCK U2 MK2

- **Price new** £48.50 (bare chassis only), £75 (including bodywork)
- **Price now** £9000-£40,000
- **Engine** 1172cc Ford
- **Rivals** Lotus Eleven, Lola Mk1, Lotus 7, BMC Mk1
- **Verdict** Understated now, but a true game-changer in its day.

MOTOR RACING WILL NEVER BE a completely accessible sport, especially in these modern times of high-tech single-make cars populating the junior slopes. But the fact that racing started as, and always will be, a sport for the well-off, didn't stop people attempting to open the grid up to 'the man on the street'. And few did that as well as Arthur Mallock and his U2 race cars.

Across six decades and 30 iterations, U2s have done more to help draw newcomers into the sport than perhaps any other design, and the wide-ranging specifications and models are still catered for today with U2s of all shapes and sizes still competing in anything from Clubmans to formulae Junior and Ford, and historic sports car competitions.

Incredible then, that one basic design could open doors to so much - U2s weren't just sports cars, they could be single-

seaters, hillclimb weapons or even mud-flinging trials cars if you liked. Having started by tuning and modifying Austin 7s after his days in the armed forces, Mallock began building his own chassis in 1958 - the U2 Mk1.

As the name suggests, the 'You-too' was conceived as a simple car, designed to be built and run cheaply enough to get more people involved in the sport. With parts laid about him on a workshop floor, Mallock chalked out a chassis that would be 36in wide, meaning it would comply with MSA and FIA demands for both sports cars and single-seaters alike.

Mallock sourced cheap production components - often from scrapyards - to form the running gear. Axles were of Austin 7, Morris Minor or Triumph Herald variety, while engines could be anything from a Ford block to Mazda rotary or even a Cosworth-tuned Goliath. It would all fit thanks to the U2's revolutionary chassis design.

Arthur drove the first U2 to the 1958 Ford Championship of Ireland title, and that kick-started everything. Two customer chassis were built and sold, before the Mallock production line kicked into gear. In 1960 the U2 Mk2 arrived which could be raced in sports car and Formula Junior races across the same weekend. Sales reached double figures for the first time.

Across the years, Mallock cars evolved as the chassis and body was refined, or honed to better suit a single discipline, and Arthur continued to apply ground-breaking suspension set-up knowledge to each. The car's accessibility meant it became a launchpad for several of the sport's future big names such as Harvey Postlethwaite, Max Mosley and Patrick Head.

After Arthur died in 1993, his son Richard took over the business of caring for the legions of Mallocks still actively racing. And his younger son, Ray, went on to found RML, which has enjoyed success across sports and touring cars since 1984. And to ram home the family appeal of the brand Arthur, Richard and grandson Michael have all won championships in a Mallock of some shape or size. ●



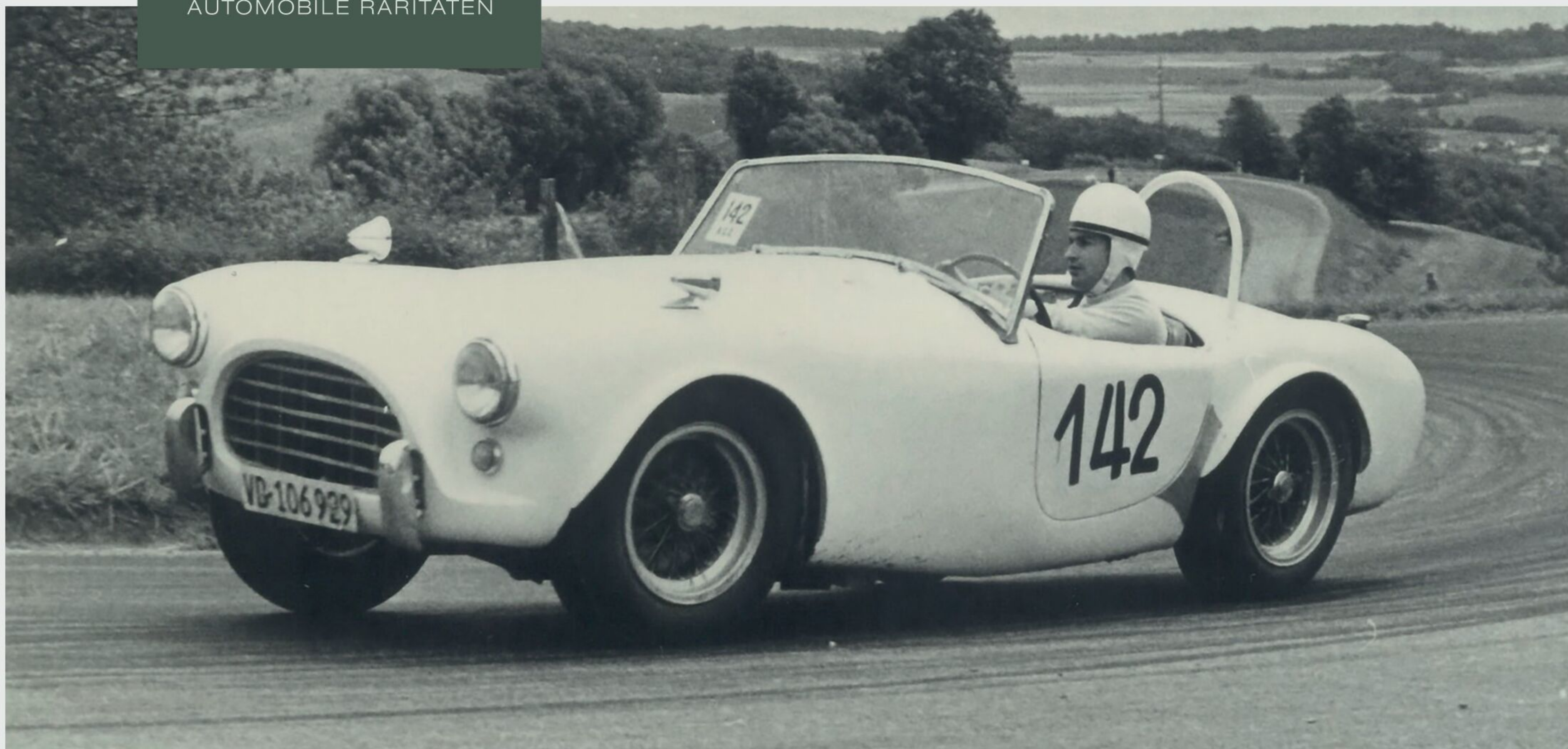
ONE FOR SALE

1960 MALLOCK U2 MK2
Chassis number 5, which remains in original Formula Junior spec
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- LE MANS 24H & FIA GT -



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- NO. 10 OF ONLY 30 BUILT -



1953 TOJEIRO MG BARCHETTA
- EX STIRLING MOSS -



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One of the R500's endearing qualities is its ability to switch into tail-happy slides whenever the driver's right foot demands



BUYING GUIDE

The light fantastic

With savage acceleration, the R500 is the most magnificent of the 7s, **Robert Ladbroke** believes. Just be careful in the wet

CATERHAM SUPERLIGHT R500

- **Price new** £36,995
- **Price now** £27,000-£55,000
- **Engine** 2-litre 4-cylinder Ford Duratec
- **Rivals** KTM X-Bow, Radical SR3 RS, BAC Mono
- **Verdict** The original hardcore Seven's timeless design has been pushed further and proved utterly captivating

WHEN COLIN CHAPMAN pulled the covers off his dainty Lotus 7 at the Earl's Court Motor Show in 1957, we doubt that even in his wildest dreams he'd have imagined that it would morph into anything like this.

At the time you might have laughed at the thought of that humble design which placed fun high above comfort ever turning into such a hardcore road-rocket/track toy as the Caterham Superlight R500 - perhaps the ultimate evolution of the design.

Let's face it, weighing just 506kg, the R500 would have pleased Chapman. No need to 'add lightness' here. There was hardly any weight to start with!

Okay, the R500 model, of which Caterham assembled 175 between 2008-2014, is a far cry from those early Lotus 7s. But it certainly has the lineage.

When Lotus felt it wanted

to shake off its kit-car image in 1972 with the aim of going more upmarket, Chapman opted to sell off the rights to the 7 design to Caterham Cars, then his sole remaining UK dealer. And so began the story of Caterham as a manufacturer, faithfully recreating the original template in either kit form or as a complete car - but the company also never stopped improving the design.

As engines developed - early cars used a

Lotus twin-cam unit, then everything from a Rover K-Series to a Suzuki Hayabusa motorbike engine - so did the chassis. While the skeleton underneath remains essentially the same spaceframe design as the Series 3 Lotus 7, it has been updated in terms of materials and strength. Same with the suspension. What started out as the live rear axle from a Ford or a Morris Ital has now become adjustable double wishbones and de-Dion rear axle.



ONE FOR SALE

2012 CATERHAM SUPERLIGHT R500


A prime example with only 6000 miles, and wisely never driven in the wet.
£41,500,

millwoodcaterham.co.uk

While the bulk of Caterham's production focuses on the entry level Roadsport or 7 models, there was room at the top for hardcore madness, and it arrived with the R500.

Out went the smaller, economical engines and in came a highly tuned 2-litre four-cylinder Ford Duratec unit, tweaked to produce 263bhp and pull right through the rev range. It could propel the R500 from 0-60 in 2.88sec.

The bodywork received lashings of carbon fibre to trim an extra 9kg off the frame and there were options for track-only suspension packages, a six-speed sequential racing gearbox and even more carbon, designed to lighten the wallets of those brave enough to opt for them.

The finished package gained rave reviews. Many of the cars were exported to countries such as Japan, Italy, Germany and France. When Caterham replaced the model with the current supercharged 620R, it did away with the standard six-speed manual gearbox of the R500. While the newer car may ultimately be faster, many purists lament the loss of the old-school manual, which only adds to the appeal of the original King of 7s. 

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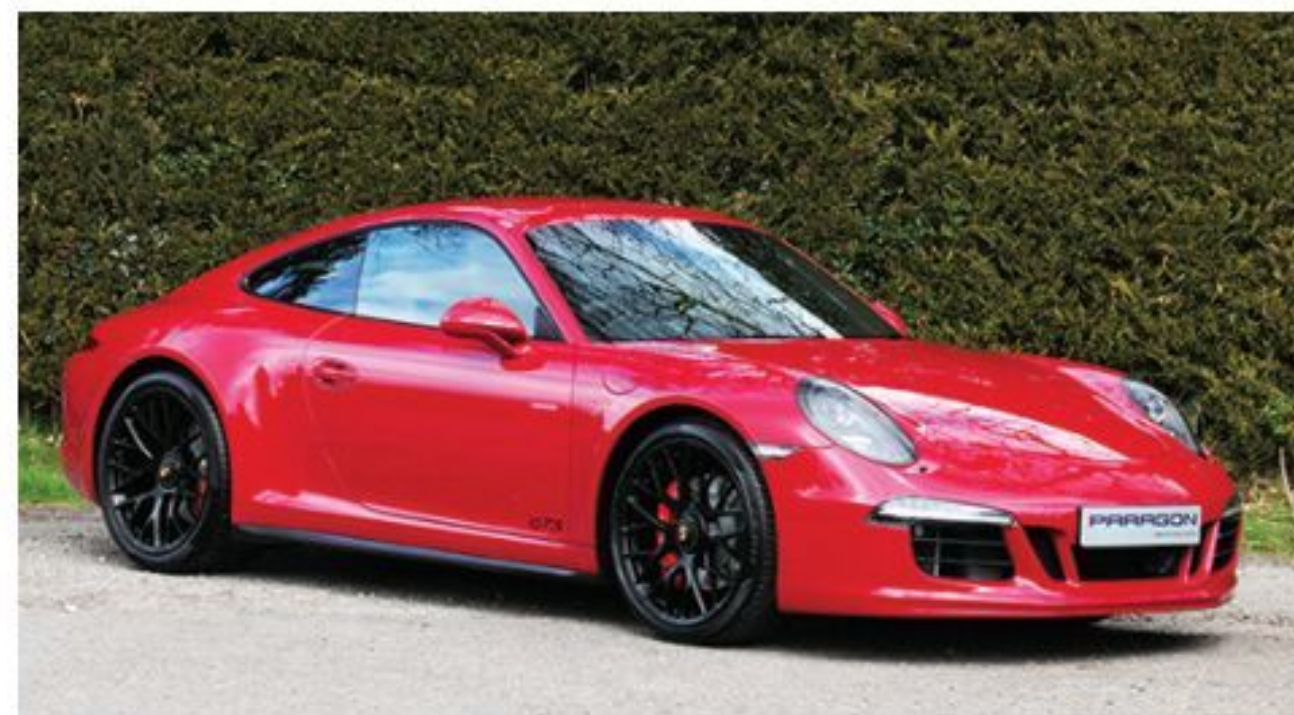
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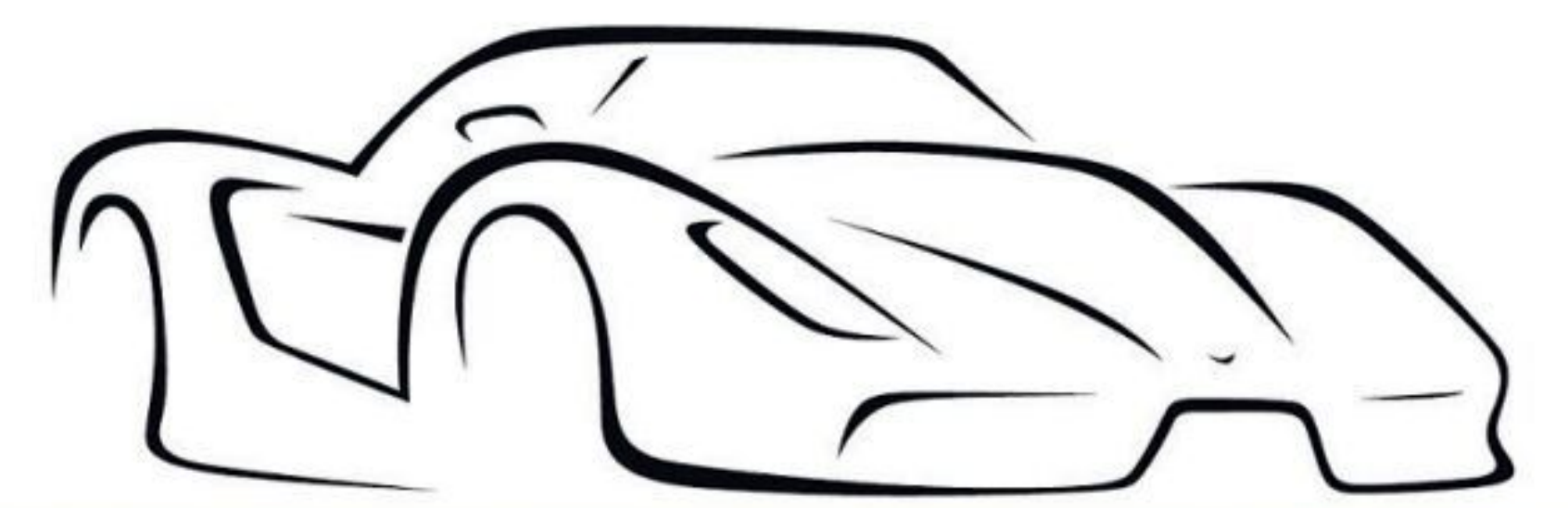
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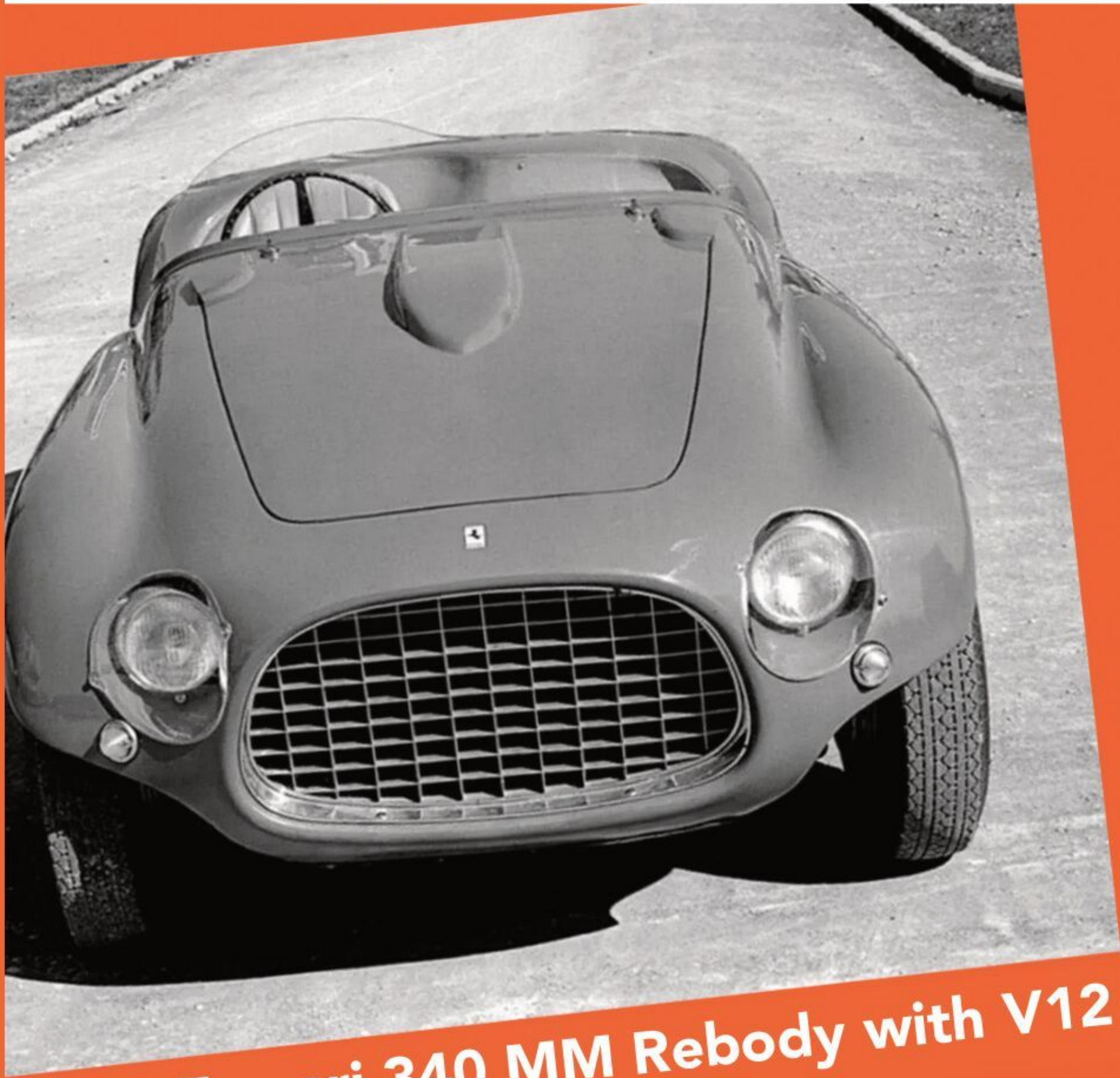
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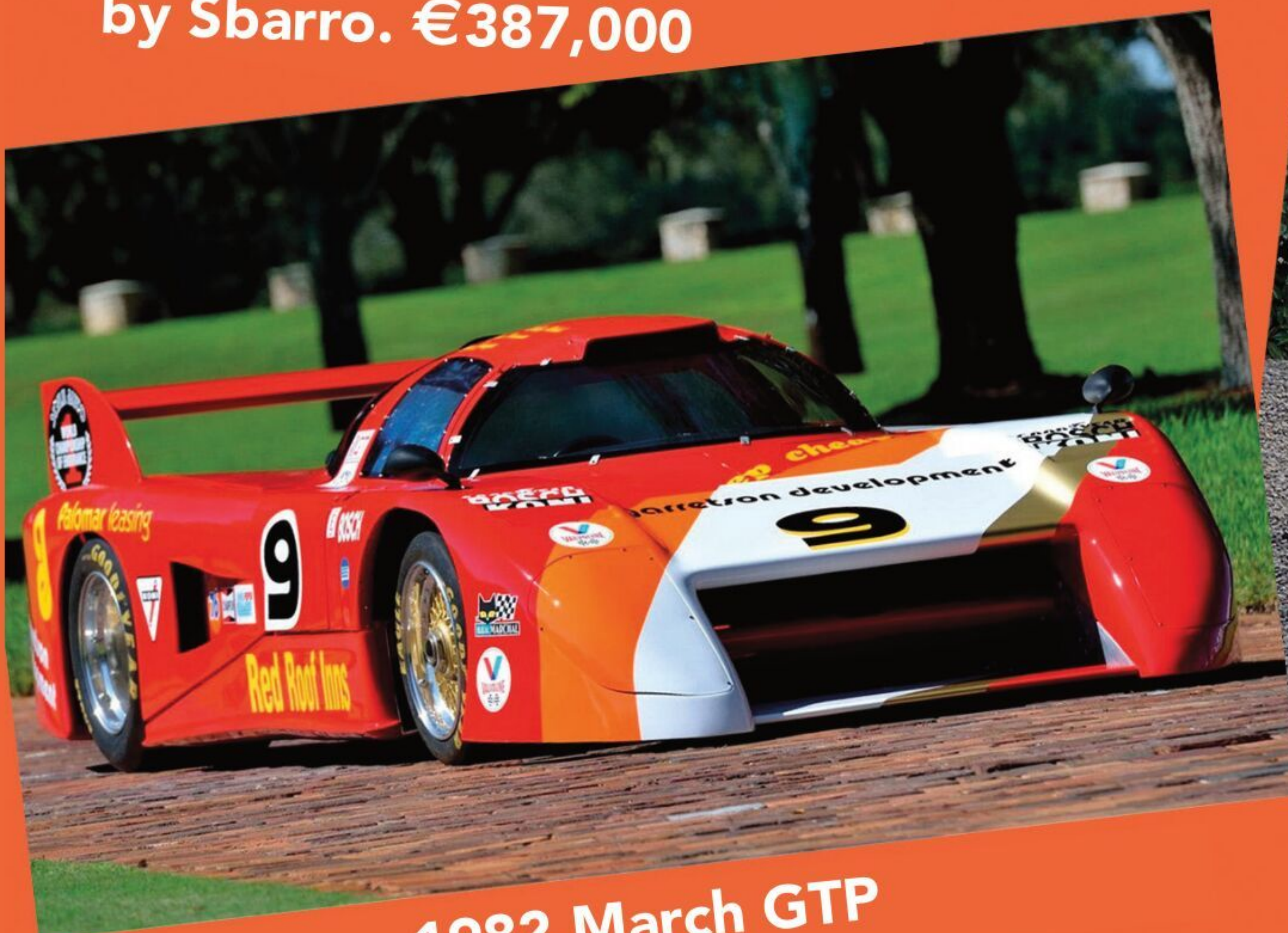
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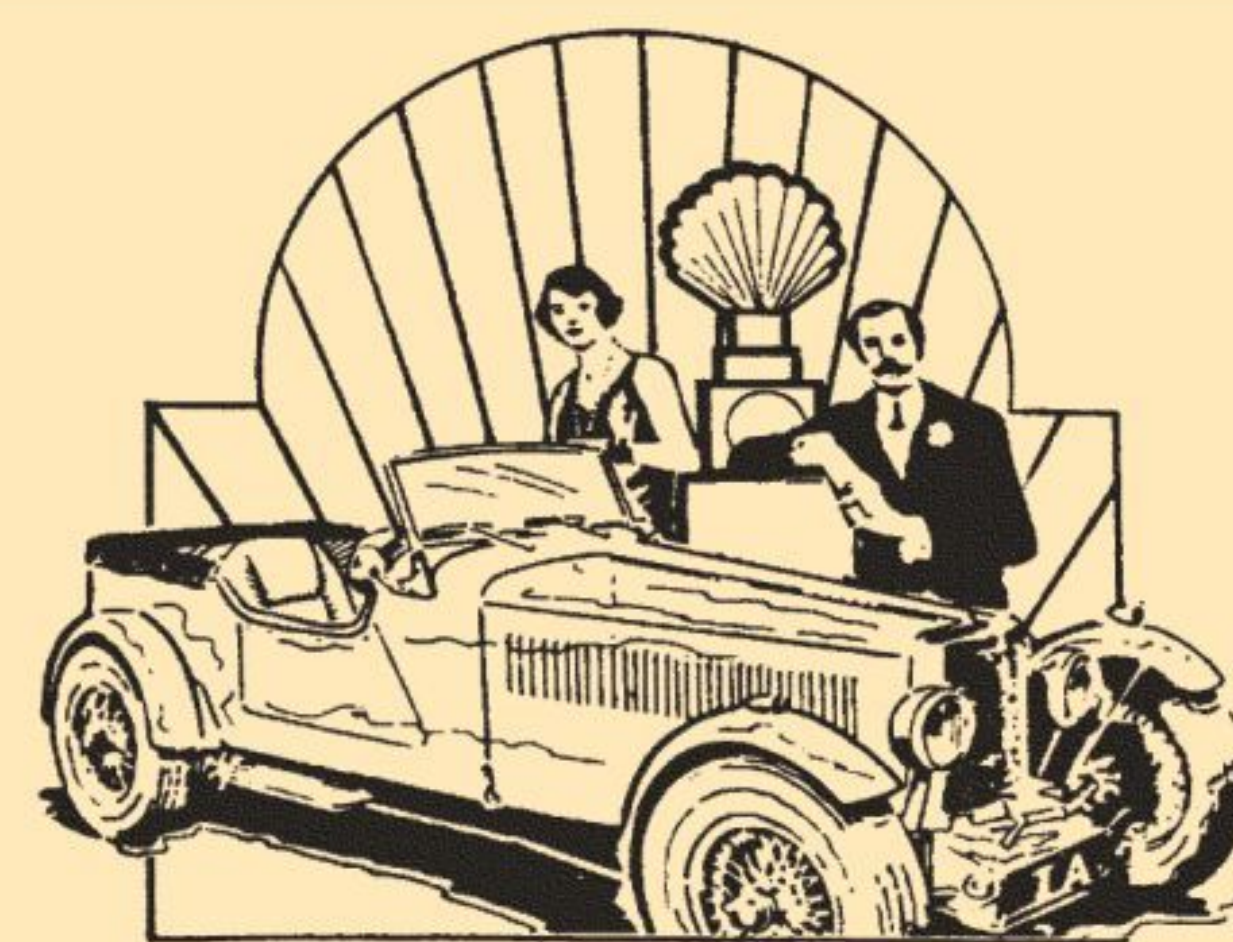
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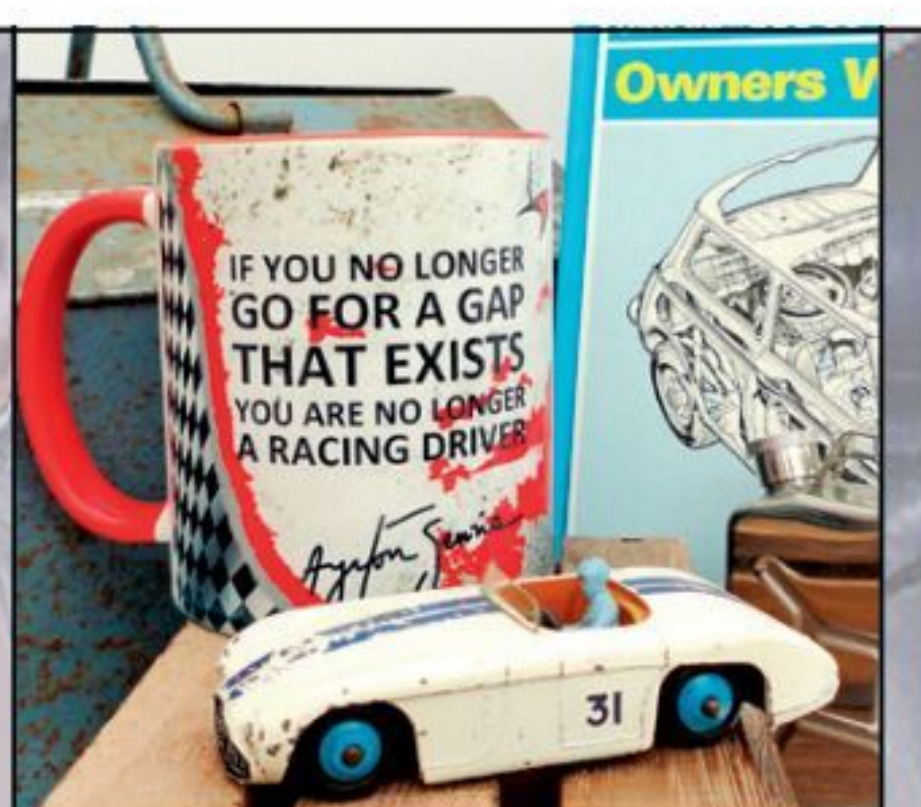
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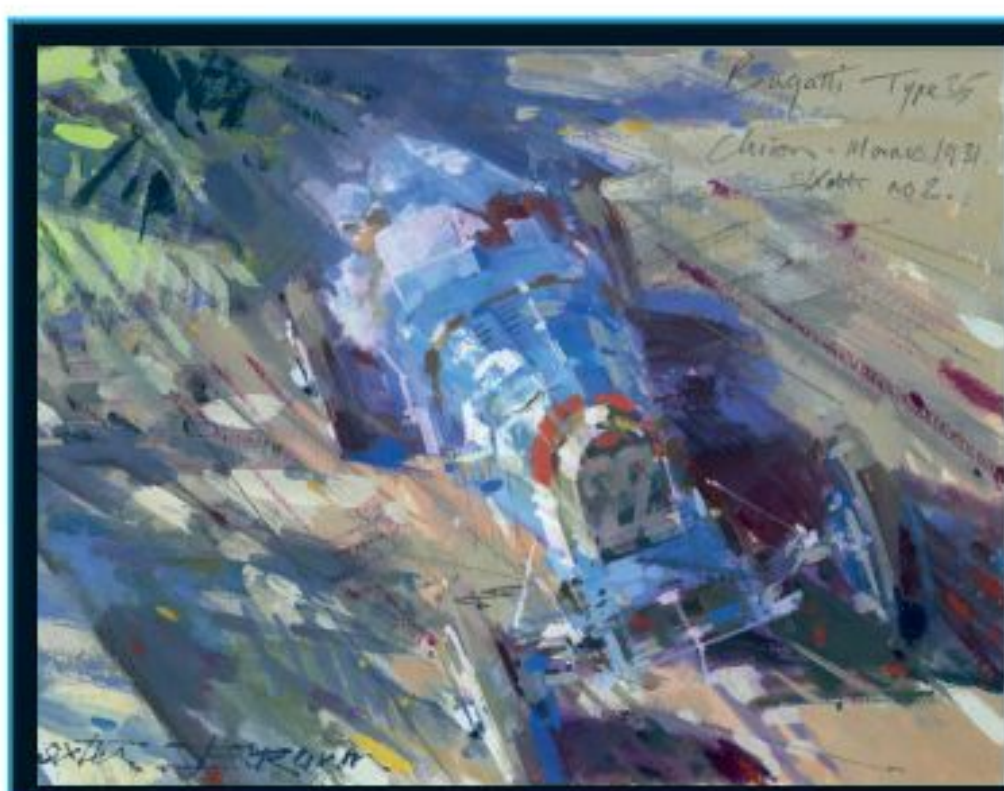
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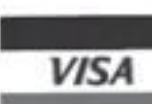
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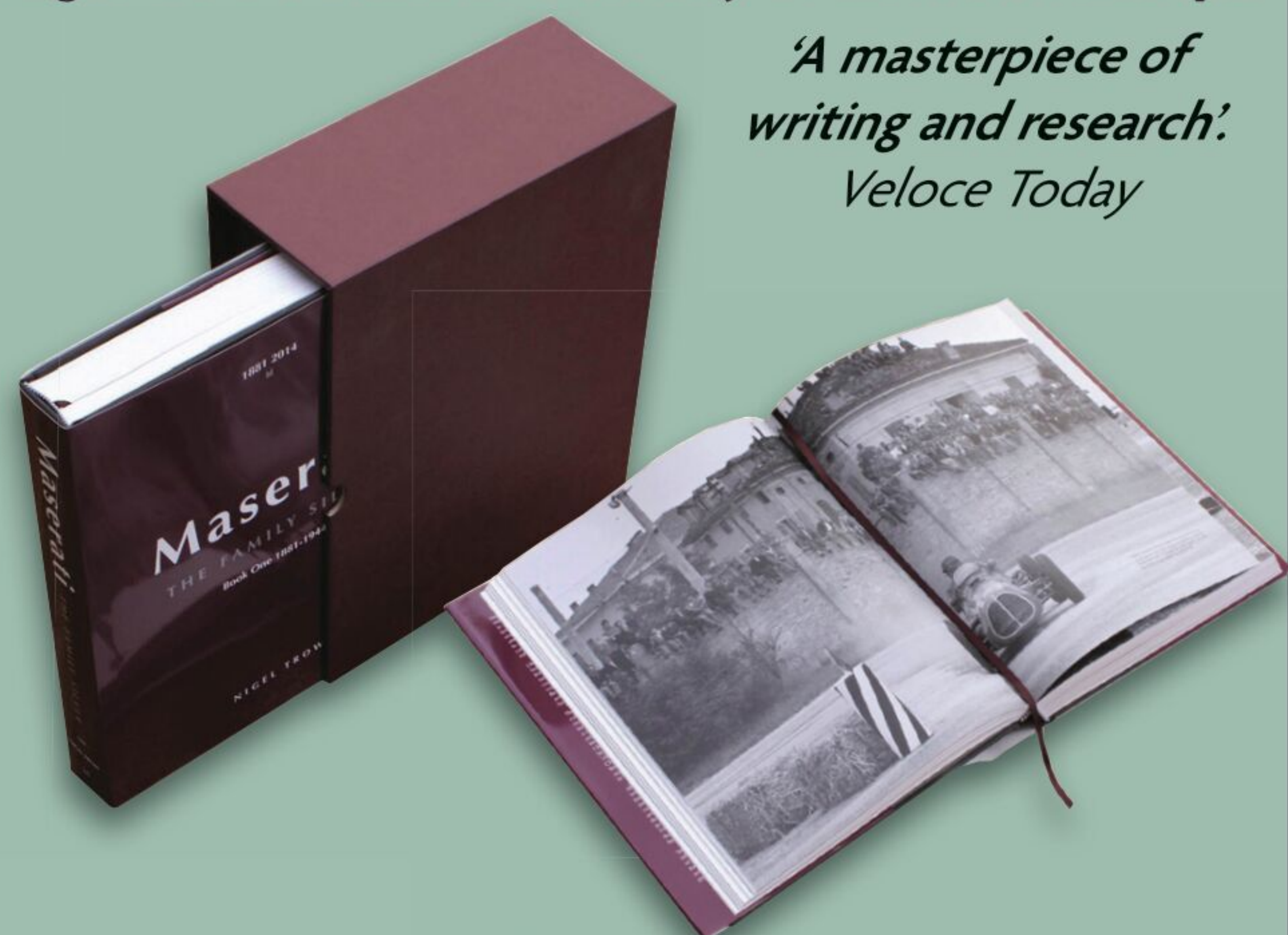
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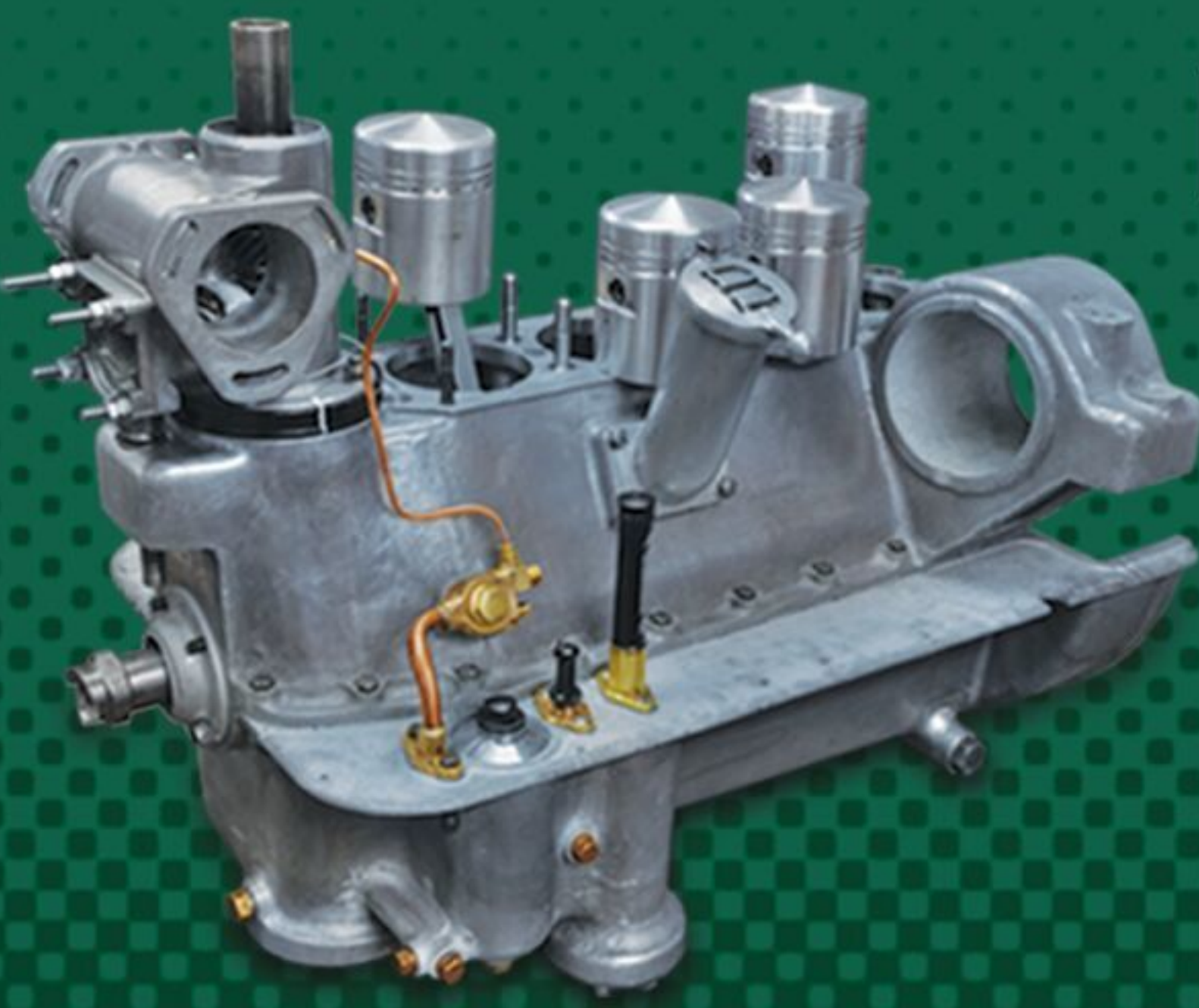
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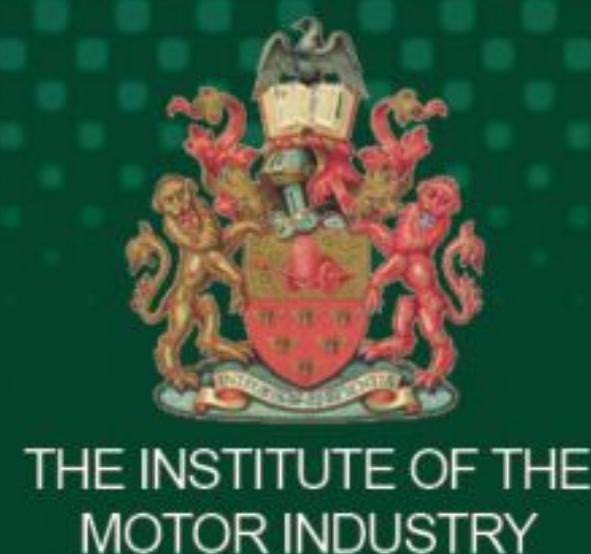
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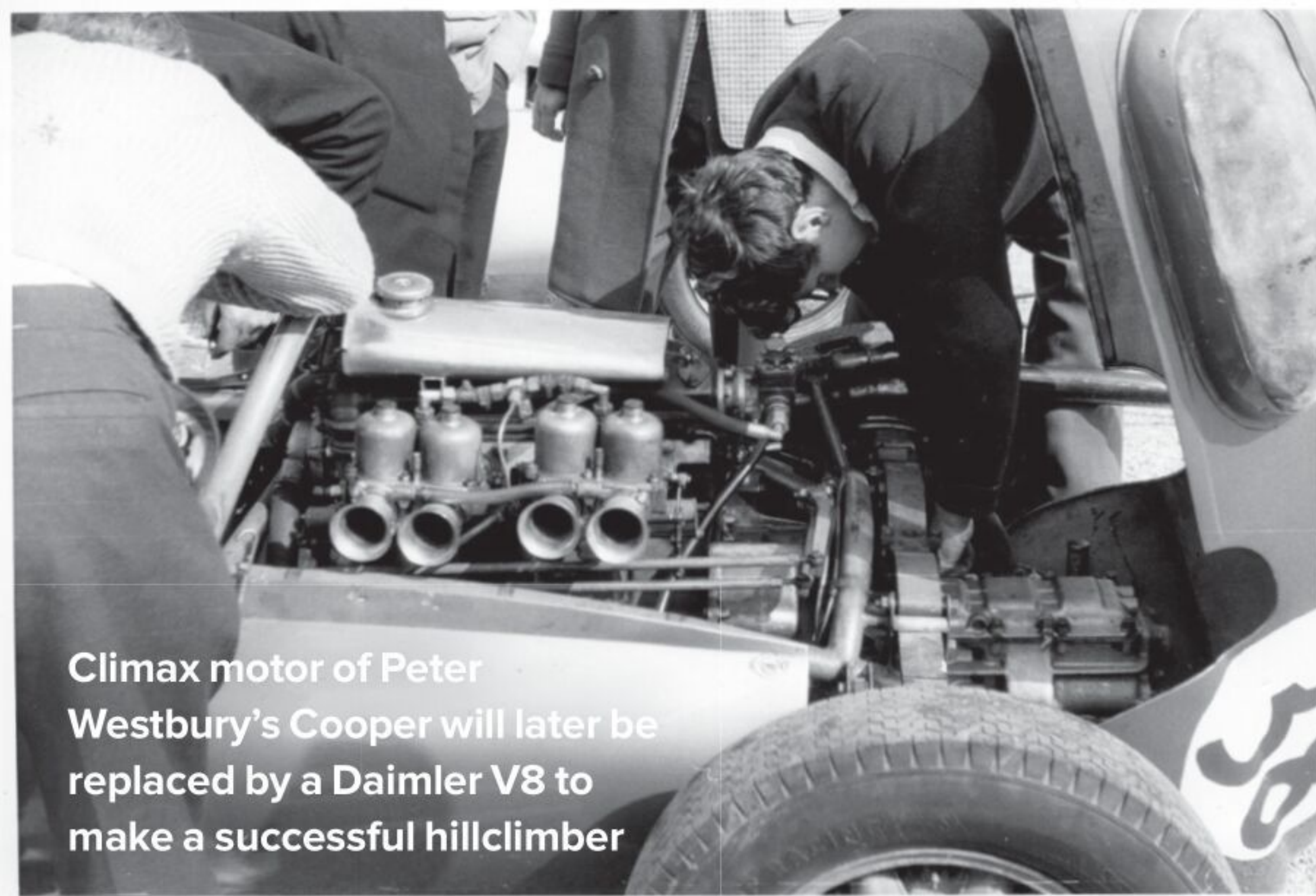
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M YOU WERE THERE



Harry Schell didn't fare well, suffering a broken throttle link on his Yeoman Cooper



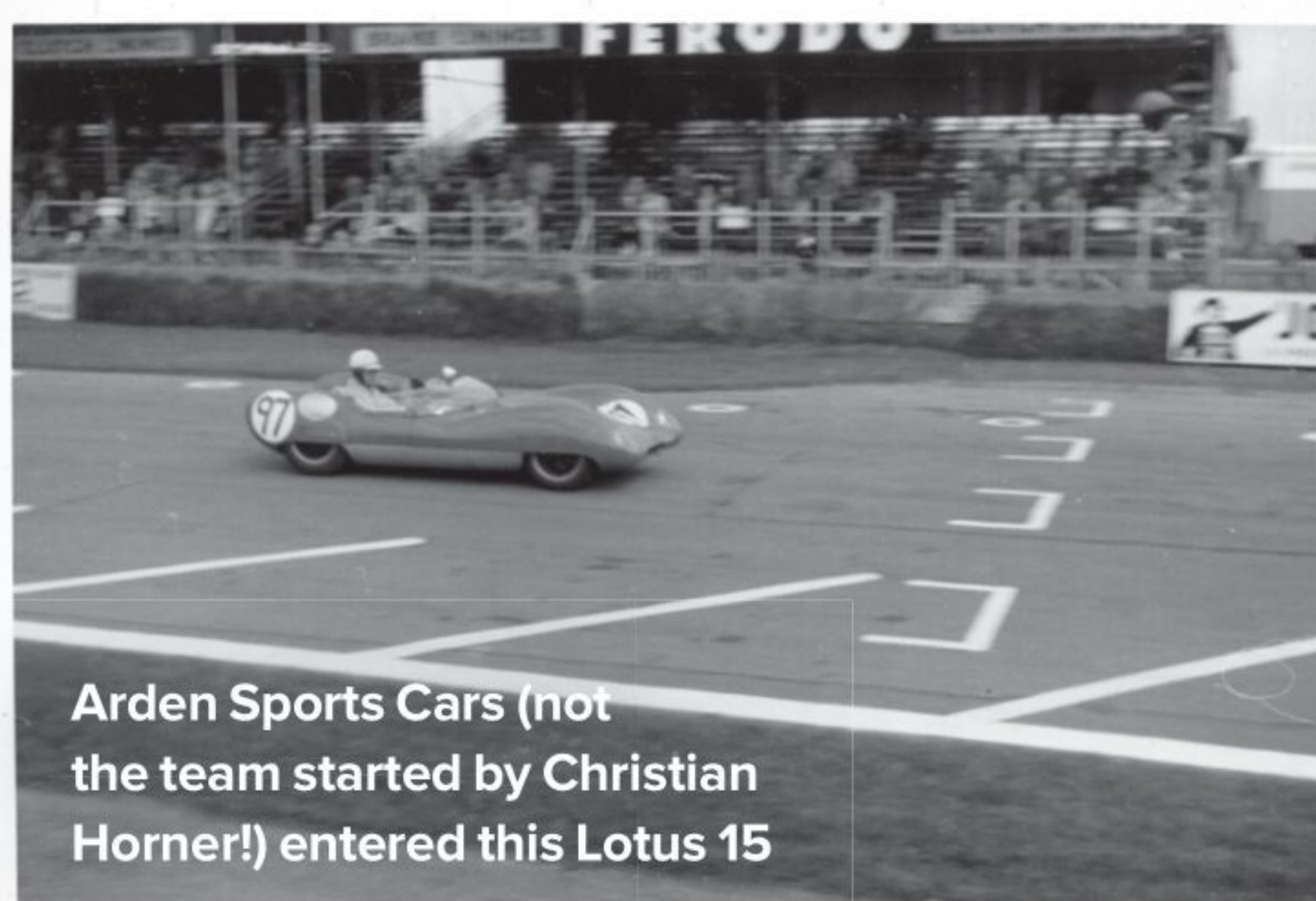
Climax motor of Peter Westbury's Cooper will later be replaced by a Daimler V8 to make a successful hillclimber



Bruce Halford (later a regular in vintage racing) pauses in the pitlane in his F2 Cooper-Climax. The Surbiton cars couldn't match the Lotus and Porsche up front



Graham Hill's mid-engined BRM P48 didn't star in the F1 race but he did collect one of the new 'Goodwood Ton' awards for a 100mph lap



Arden Sports Cars (not the team started by Christian Horner!) entered this Lotus 15

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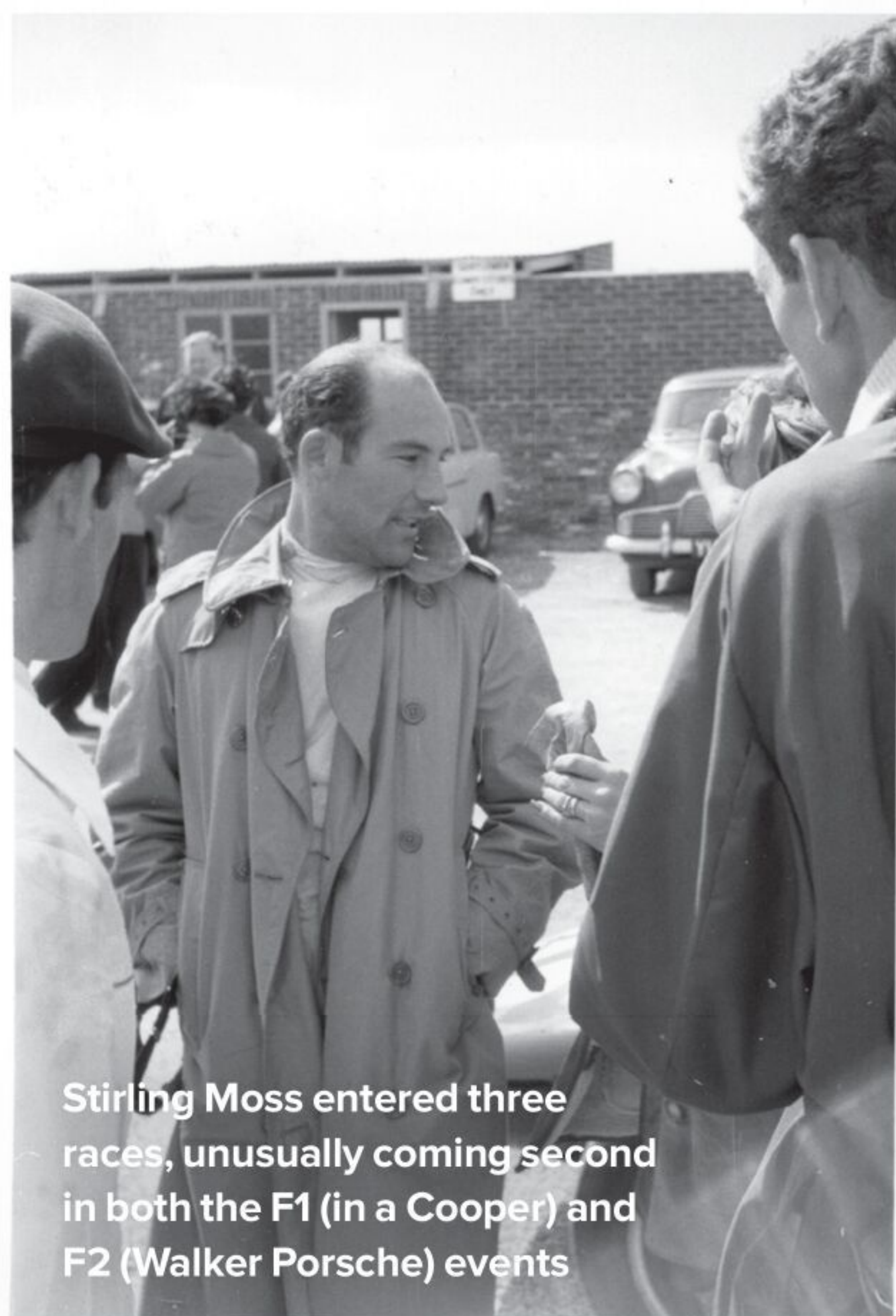
Chris Bristow brought his Yeoman Credit Cooper home third in the Glover Trophy F1 race



With an FJ victory under his belt, Jim Clark drove the Border Reivers Aston Martin DBR1 in the big sports car race, leading for a while before the car began to ail and he retired



Elegant Lola-Climax of LW Keens stops for attention. Note Le Mans start markings on the straight



Stirling Moss entered three races, unusually coming second in both the F1 (in a Cooper) and F2 (Walker Porsche) events

Give me Goodwood on an Easter day...

Some 55,000 people came to the Sussex track for this opening 1960 meet. **Colin Weston** was there too, capturing all the action



Henry Taylor's F2 Laystall-Climax started life as a Lotus 12 but highly modified with a Laystall gearbox and Cooper front suspension



In his *MS* report Bill Boddy called Innes Ireland "the new ace" when he beat Moss in the Formula 1 race



GRAND PRIX PHOTO



AUGUST 4, 1968
NÜRBURGRING, GERMANY
Ferrari's Jacky Ickx (9) and Chris Amon (8) share the front row with Brabham's Jochen Rindt at a wet German GP, but the Ferrari favourites were outclassed by Jackie Stewart, who finished more than 4mins ahead of Graham Hill

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1997 Aston Martin Virage Volante with factory wide body, finished in Oxford Blue with Magnolia hide interior. 22,000 miles only with Richard Williams service history. Extremely rare. **£89,950**



1962 Bentley S2 Continental Convertible finished in Original Shell Grey with Cranbury hide interior and has been the subject of a full body-off restoration to concours standard. Extremely rare and very collectable. **£256,000**



1993 Aston Martin Virage Volante finished in Buckingham Green with Parchment hide interior and a black mohair electric hood. Original throughout with only 16,000 miles covered from new. **£115,000**



1967 Jaguar E type 4.2 Roadster finished in Carmen Red with Black hide interior and a new black mohair hood. This is a really nice example that has had a replacement engine fitted in the distant past. Excellent to drive. **£120,000**



2011 Nissan GTR Black edition with engine upgrade by Middlehurst, 25,000 miles only, black hide interior with carbon trims and carbon sills and rear spoiler and carbon front splitter. Superb condition throughout. **£39,950**



1964 Jaguar E type 3.8 Roadster totally restored to concours condition. Finished in Carmen red with black hide interior and a black mohair soft top. Superb throughout. **£129,950**



2008 Bentley GTC Mulliner finished in Peacock blue with cream hide interior with only 43,000 recorded miles and a complete service history and in fabulous condition throughout. Satellite navigation upgrade with reversing camera. **£41,950**



1971 Aston Martin DBS V8 finished in Signal red with cream hide interior. Superb coachwork, completely unmarked interior and a beautifully detailed engine bay. Perfect for the enthusiastic Aston collector and very fairly priced at **£145,000**



1958 Aston Martin DB MkIII finished in Oxford blue with tan hide interior. Known to us for the past 12 years during which time it has had £60,000 lavished upon it all of which reflect the way that it now drives. A very enjoyable Aston to own. **£235,000**



1997 Aston Martin DB7i6 finished in Chiltern Green with House of Commons green hide interior. Fabulous condition with a massive history file and faultless to drive. **£26,950**



2001 Aston Martin DB7 Vantage Volante finished in Solent Silver with Pacific blue and Parchment hide interior, dark blue mohair electric hood, £4,000 factory rear end upgrade with V600 lights, excellent history, **£28,950**



2002 Aston Martin DB7 Vantage coupe finished in Aston Racing green with Forest Green and Parchment hide interior, One owner for the last 10 years, superbly maintained and in really excellent condition throughout and great value at **£27,950**.

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